

## Installation of level 2 automation for billets quality improvement in South Africa

Cape Gate commissioned AIC the design, realization and installation of an Advanced Process Control Level 2 System at their Reheating Furnace in the rolling mill.

This system is able to perform the automatic control of billets thermal profile inside the pusher type furnace installed at Cape Gate Bar Mill rolling mill and it is a table-based model system.

AIC is going to install Level 2 table-based reheating furnace on an existing third-party supplied reheating furnace for optimizing Gas consumption and improving the quality of billets produced.

AIC system will perform following tasks:

- Heating and cooling ramps of the reheating furnace
- Temperature curves set-up managed by recipes
- Delay strategies
- Material tracking inside furnace
- Billets are flagged in tracking if too long and information sent to handling PLC.
- · Feedback of the exit temperature of the material at rougher stand
- Feedback of the rougher stand(s) current absorption

With following benefits:

- Reduce heating delays on products and their effects on consumptions
- Improving the maximum productivity T/h
- Decrease the gas consumptions, setting zones temperatures according to the set thermal efficiency of the furnace based on tables
- Improve and standardize the final product quality

Other functionalities of Level 2 system are:

- Reach the desired billet temperature at the discharge in accordance with the rolling requirements
- Keep present of production delays, minimizing pieces over heating
- Set a heat up curve for each kind of product inside the furnace and low the consumptions
- Tracking of each piece inside the furnace
- Main furnace operator's functions are managed by the level 2 system so that operators can dedicate their time to other tasks
- Delay strategy to handle production delays.
- Production reports



POS	ZONE DE	LAY HEAT_NO	TRACK	NG PRODUCT_ID			DULCT N	JMBER BILLET LENGTH		LEVEL	II CALCULATIC	NS
1	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	62				Setpoints	
2	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	61	0	i	L2 C	DESC Ramp Delay	ASC Ramp Turnback
3	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	60	0	PREF			500 1501 °F
4	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	59	0	HEAT	TZONE 1749 °F	999 1630 ºF	700 1729 °F
5	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	58	0		TH SOAK 2221 °F	450 2131 °F	
6	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	57	0			450 2151 °F	
7	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	56	0				
8	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	55	0	NOR	TH SOAK 2260 °F	450 <u>2170</u> °F	600 2269 °F
9	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	54	0		DEI		
10	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	53	0		DEL	AY STRATEGIE	5
11	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	52	0		Manual D	elay	
12	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	51	0		START	FINISH	CANCEL DELAY
13	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	50	0	i			
14	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	49	0		Automatic [		Countdown
15	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	48	0	Trig.		ISABLE FINISH	Trigger
16	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	47	0		-		0 sec
17	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	46	0	i	Unscheduled		
18	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	45	0	Dura	ation 30 min	NABLE START	
19	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	44	0			ISABLE FINISH	Countdown
20	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	43	0		Scheduled I		Duration
21	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	42	0	Dura		NABLE	Delay
22	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	41	0			ISABLE FINISH	30 min
23	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	40	0		Downday D		
24	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	39	0	19	15 09 09 2016	NABLE START	
25	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	38	0	hh:n	nm MM/DD/YYYY	ISABLE FINISH	
26	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	37	0			Ready at Timing	
27	PREHEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	36	0				C KEEP INC F
28	HEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	35	0	PREF	HEAT Mon Oct 1	7 17:27:25 2016	
29	HEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	34	0	HEAT	ZONE Mon Oct 17	7 17:22:46 2016	
30	HEAT	52075694	5207569402 A62GG0240	A2 X 2 X 3/16	6	112	33	0	sout	TH SOAK Mon Oct 17	17:23:33 2016	
31	HEAT	52075694	5207569402 462000240	42 X 2 X 3/16	6	112	32	0		TER SOAK Mon Oct 17		1 🗖 🖂 🖻
									_	TH SOAK Mon Oct 1		
								REFRESH				
8HF											Companying of C	
ARGEF	Section: Sta		Maintenance Analysis I	EVEL 2 °F >> °C							Supervision	RESET

(level 2 system HMI screen installed at another facility)

## About Companies:

**AIC Group** is a technological partner with extensive experience and deep know-how and stands itself as a global power control supplier and system integrator designing, manufacturing, and implementing automation systems, process control, and mechatronic solutions for both greenfield and revamping projects. Focusing on the steel and metals industries for long and flat products, the Group provides cutting-edge technical solutions by handling complex project schedules and thus establishing satisfactory and remarkable partnerships through its 6 international offices.

More than 45 years of modernization for endless reliability processes.

**Cape Gate Fence & Wire Works (Pty) Ltd** is a South African market leader in the steel industry, with over 85 years of experience in delivering quality products. It is a wire manufacturer and supplier of steel products, wire products, rod mill and bar mill services.

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