Chapter 11

SPECIFICATIONS

LCI Furnaces
DIVISION OF LOCHABER CORNWALL INC
CONTINUOUS BELT IR FURNACE

EQUIPMENT SPECIFICATIONS

DOC NBR:	STD - 802-101402 , R0		
MODEL:	LA-309P	STD & HIGH POWER	
SERIAL NBR:	ALL	SIZE A	SHT 1 OF 1

Equipment Model

Application: Typical 800 C

Model	Base Equipment	Control Zones	Furnace Heated Length		Nominal Furnace Belt Width	
LA-309P	Continuous Belt Controlled Atmosphere Furnace	3	30 in	76 cm	9.5 in	24 cm

Equipment Arrangement

Phase	Process	Max	Length		Process Gas	Temperature (range)
Phase 1	IR Furnace, 3 Zones	1000 °C	30 in	76 cm	N2	100-960 C
Phase 2	Transition Tunnel		15 in	38 cm	N2	100-850 C
	Gas Convective Cooling, Exterior Fan Heat Removal		30 in	76 cm	N2	25-360 C

Process Sections

Function	Name	Location	Length		Process Gas	Temperature (typ)
	Load Station	Entrance load area	15.0 in	38 cm		ambient
IR Furnace	ENTRANCE BAFFLE	Entrance barrier	15.0 in	38 cm	CDA or N2	80-250 C
	ZONE 1	Heating chamber 1	7.5 in	19 cm	N2 or FG	80-975 C
	ZONE 2	Heating chamber 1	15.0 in	38 cm	N2 or FG	80-975 C
	ZONE 3	Heating chamber 1	7.5 in	19 cm	N2 or FG	80-975 C
Cooling	TRANSITION TUNNEL	Exhaust Transition	15.0 in	38 cm	CDA or N2	360 °C
	CACT-COOLING TUNNEL	Cooling section	30.0 in	76 cm	CDA or N2	55-360 C
Product Unload	Unload Station	Exit station	15.0 in	38 cm	none	ambient
	Frame Adjustment		1.0 in	3 cm		
	Total		121.0 in	307 cm		

Process Gas

(If Single Gas combine GAS1 & GAS2. Dual Gas: GAS 2 = CDA, N2 or FG to furnace heating zones, GAS1=N2 or CDA to all except zones)

	Actual Conditons		Typical @ 800 C		Typ Low O2@800C (pos atmos)		Max (all flowmeters open)	
Furnace Replenishment Rate			2.8 rep/min		4.0 rep/min		12.3 rep/min	
	Temp °C	Press psi	Min Flow scfh	Min Flow sL/m	Typical scfh	Typical sL/m	Max Compressor scfh	sL/m
N2 Supply	21	70	149	70	286	135	636	300
CDA Supply	21	70	157	74	123	58	724	342
TOTAL PROCESS GAS			306	144	409	193	1,361	642

Exhaust Gas

	Temp °C	Press in H_2O	Min Flow scfh	Min Flow sL/m	Typical scfh	Typical sL/m	Maximum Exhaust scfh	sL/m
N2 & CDA mix	200	6	306	144	68	32	684	323

Cabinet Ventilation

Cabinet Ventilation Fans (vent to room or exhaust system)	Flowrate	1100 cfm	1870 m3/h
	Temperature	<86°F	<30°C

Transport System

Belt width	9.5 in	24.1 cm		Belt Edge Heater(s):	30-inch, pair	
Belt type	Balanced spiral weave			Motor:	Bison 1/8 HP, DC	
Product height	2 in (5.1 cm) above belt level.			Baffle plate clearance:	0.25" above belt	
Belt speed range	.5-10 ipm, 1-20 ipm, or 2-40 ipm			1.3-25 cm/min, 2.5-50 cm/min, or 5-100 cm/min		
Conveyor height	36.0 in	+/- 1.5 in	adjustable	91.4 cm	+/-3.8 cm	adjustable

Electrical System

	Standard				High Power			
Voltage (as configured)	380 Vac	400 Vac	415 Vac	480 Vac	380 Vac	400 Vac	415 Vac	480 Vac
Frequency, Hz	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Power, maximum, kW	19.3	20.9	22.2	25.3	23.4	25.4	26.9	29.3
Current, maximum, A	29.3	30.2	30.9	30.5	35.6	36.7	37.4	35.3
Power, kW @ 800 C	13.6	14.8	15.6	17.8	16.5	17.9	18.9	20.6
Current, A @ 800 C	20.7	21.3	21.8	21.5	25.1	25.8	26.3	24.8

Materials of Construction

Heating Chamber	Aluminum, aircraft	Cooling	Aluminum, aircraft	Belt	Nichrome V, 80%Ni,20%Cr, <1% Fe
Baffle & Eductor	304 Stainless steel	Belt support	Quartz rod, Quartz tube	Frame	Steel, 2-prt urethane or powder coated
Heating element	Quartz, near infrared	Belt Return	UHMW-PE	Cover Panels	18GA Steel, urethane or powder coated

Furnace Dimensions

		Length	Width	Height (floor to stack)	Furnace Sect	Coolg Sectn	Weight
Furnace, English	Net	121 in	29 in	68 in +/- 1.5 in	1650 LB	INC	1650 LB
Furnace, Metric	Net	3.1 m	0.74 m	1.73 m +/- 0.04 mm	749 kg	INC	750 kg

Standard Conditions	Pressure	14.7 psia	101.3 kPa	Temperature	70 °F	21 °C

LCI Furnaces DIVISION OF LOCHABER CORNWALL INC	DATA SHEET	DOC NBR: STD 802-101528 R5	
SPECIFICATIONS	IR FURNACE SYSTEM BASE FUSE LIST	MODEL: LA-309P	APVL SLB 6/28/16
		SERIAL NBR: 1303091xxx	PRNT 28Jun16
		DATE: 06/27/16	SHT 1 of 1

STANDARD LA-309P (480 Vac)

Safety Panel and Control Enclosure (control system)		
Fuse Label	**Size (A)**	**Comments**
FA	5	24 Vac control, MDX
FB	4	Switched/Unswitched 117 Vac, MDX
F1	3	To TR0, L1 leg, KTK
F2	3	To TR0, L2 leg, KTK
F3	3	To TR1, L1 leg, KTK
F4	3	To TR1, L2 leg, KTK
F5	3	To TR2, L2 leg, KTK
F6	3	To TR2, L3 leg, KTK
F7	3	To TR3, L3 leg, KTK
F8	3	To TR3, L1 leg, KTK

Safety Panel, Power Distribution		
Fuse Label	**Size (A)**	**Comments**
FE	1	TIC1 power, MDX
FF	1	TIC2 power, MDX
FG	1	TIC3 power, MDX
FH	0.5	Speed Display power, MDX
FJ	2	PLC power supply, MDX
FK	2	PLC analog module power supply, MDX
FL	0.5	Phase 1 SCR 24 Vac power, MDX
FM	0.5	Phase 2 SCR 24 Vac power, MDX
FN	0.5	Phase 3 SCR 24 Vac power, MDX

Heating Lamp/Edge Heat SCR Fuses (all KTK)		
Fuse Label	**Size (A)**	**Comments**
F30	15.0	Zone 1 Top
F31	15.0	
F32	15.0	Zone 1 Btm
F33	15.0	
F34	10.0	Zone 2 Top
F35	10.0	
F36	10.0	Zone 2 Btm
F37	10.0	
F38	15.0	Zone 3 Top
F39	15.0	
F40	15.0	Zone 3 Btm
F41	15.0	
F42	6.0	EH1L
F43	6.0	
F44	6.0	EH1R
F45	6.0	

Belt Motor Controller		
Fuse Label	**Size (A)**	**Comments**
MA	3	MDX

HIGH POWER LA-309P (480 Vac)

Safety Panel and Control Enclosure (control system)		
Fuse Label	**Size (A)**	**Comments**
FA	5	24 Vac control, MDX
FB	4	Switched/Unswitched 117 Vac, MDX
F1	3	To TR0, L1 leg, KTK
F2	3	To TR0, L2 leg, KTK
F3	3	To TR1, L1 leg, KTK
F4	3	To TR1, L2 leg, KTK
F5	3	To TR2, L2 leg, KTK
F6	3	To TR2, L3 leg, KTK
F7	3	To TR3, L3 leg, KTK
F8	3	To TR3, L1 leg, KTK

Safety Panel, Power Distribution		
Fuse Label	**Size (A)**	**Comments**
FE	1	TIC1 power, MDX
FF	1	TIC2 power, MDX
FG	1	TIC3 power, MDX
FH	0.5	Speed Display power, MDX
FJ	2	PLC power supply, MDX
FK	2	PLC analog module power supply, MDX
FL	0.5	Phase 1 SCR 24 Vac power, MDX
FM	0.5	Phase 2 SCR 24 Vac power, MDX
FN	0.5	Phase 3 SCR 24 Vac power, MDX

Heating Lamp/Edge Heat SCR Fuses (all KTK)		
Fuse Label	**Size (A)**	**Comments**
F30	15.0	Zone 1 Top
F31	15.0	
F32	15.0	Zone 1 Btm
F33	15.0	
F34	20.0	Zone 2 Top
F35	20.0	
F36	20.0	Zone 2 Btm
F37	20.0	
F38	15.0	Zone 3 Top
F39	15.0	
F40	15.0	Zone 3 Btm
F41	15.0	
F42	6.0	EH1L
F43	6.0	
F44	6.0	EH1R
F45	6.0	

Belt Motor Controller		
Fuse Label	**Size (A)**	**Comments**
MA	3	MDX

LCI Furnaces DIVISION OF LOCHABER CORNWALL INC	FLOWMETER SETTINGS	DOC NBR: STD - 802-101460-01 R0
Customer:		MODEL: LA-309P DWN: SLB 03/31/16
		SERIAL NBR: 1303091xxx APVL: JMC 03/31/16
		PRINT: 28Jun16 PM: JMC 03/31/16

PROCESS GAS

GAS1	N2	Nitrogen	L/m
GAS2	CDA	Clean Dry Air	

SETTINGS FOR STANDARD FLOW: SINGLE GAS MODEL
Typical 800 C

Replenish Rate is the number of times/minute that the furnace (or a section of the furnace) evacutes its gas

Replenish Rate	Furnace or Section Replenishes/Hour	Time to Refresh Furnace or Section
1 times/minute	60 times/hour	60 seconds
2 times/minute	120 times/hour	30 seconds
3 times/minute	180 times/hour	20 seconds
4 times/minute	240 times/hour	15 seconds

Different sections of the furnace can be replenished at different rates, if required

Flowmeters graduated in: sL/m (lg=RMC flowmeters, sm=small RMA flowmeters)

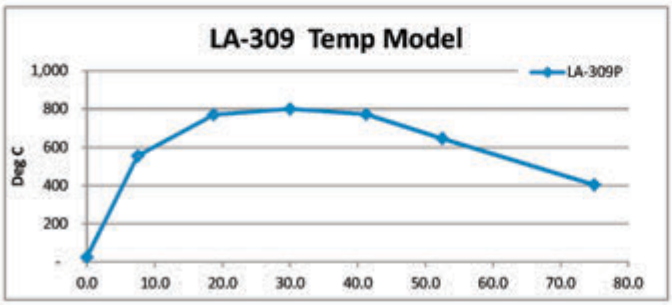
1 per Minute Replenish Rate Flow Setting sL/m grad: 2.0

BALANCE

0.0	scfh difference	Balanced atmosphere in furnace	
0	sL/m grad	0.0%	incr (decr) of inflows over outflows

No.		Location	Label	deg C	Metered Gas	Flowmeter Size L/m	Replenish Rate Flow Setting sL/m grad	Desired Replenish Rate per Minute	Initial Flowmeter Setting scfh grad	Initial Flowmeter Setting sL/m grad
1	BESE	Entrance barrier	ENTRANCE BAFFLE		CDA	100	5.0	2.0	21	10
2	Z1	Heating chamber 1	ZONE 1	800	N2	100	3.2	4.6	31	15
3	Z2	Heating chamber 1	ZONE 2 & 3	800	N2	100	9.6	2.1	43	20
	Z3	Heating chamber 1	Z3	800				2.1		
4	TTSE	Exhaust Transition	TRANSITION TUNNEL	660	CDA	100	4.9	2.0	21	10
5	CACT	Cooling section	COOLING		CDA	100	10.4	3.5	77	36
6	HC	Heat chamber sides	LAMP SEALS		N2	100	12.9	2.8	75	36
							46	2.8	268	127

	EXHAUST						distr %	scfh grad	sL/m grad
7	EEBE	Entrance Stack	ENTRANCE STACK		CDA	10	60%	7.6	3.6
8	EETT	Transition tunnel ed	TRANS TUNNEL STACK		CDA	10	40%	5.1	2.4
							100%	19.1	9.0



Furnace Balance	scfh	sL/m
Gas Inflow to furnace	287	135
Gas to Eductors	19	9
Total Gas Required	306	144
- Stack Exhaust Flow	306	144
(Net outflow)	0	0
	cu ft	L
Furnace internal volume	4	108

PROCESS GAS SUPPLY REQUIREMENTS			Temp °C	Press psi	Gas	scfh	sL/m
1	Gas 1	All furnace areas except CDA Mix except CDA Mix, Heating Chambers Z2 & 3	21	70	N2	149	71
2	Gas 2	CDA Mix, Heating Chambers Z2 & 3	21	70	CDA	147	69
			STP = 21C, 1 atm		Total	297	140

LCI Furnaces
DIVISION OF LOCHABER CORNWALL INC

Customer:

FLOWMETER SETTINGS

DOC NBR:	STD -	802-101460-02		R0
MODEL:	LA-309P	DWN:	SLB	03/31/16
SERIAL NBR:	1303091xxx	APVL:	JMC	03/31/16
PRINT:	28Jun16	PM:	JMC	03/31/16

PROCESS GAS

GAS1	N2	Nitrogen	L/m
GAS2	CDA	Clean Dry Air	

SETTINGS FOR LOW O2 FLOW: SINGLE GAS MODEL
Very Low O2

Replenish Rate is the number of times/minute that the furnace (or a section of the furnace) evacutes its gas

Replenish Rate	Furnace or Section Replenishes/Hour	Time to Refresh Furnace or Section
1 times/minute	60 times/hour	60 seconds
2 times/minute	120 times/hour	30 seconds
3 times/minute	180 times/hour	20 seconds
4 times/minute	240 times/hour	15 seconds

Different sections of the furnace can be replenished at different rates, if required

Flowmeters graduated in: sL/m (lg=RMC flowmeters, sm=small RMA flowmeters)

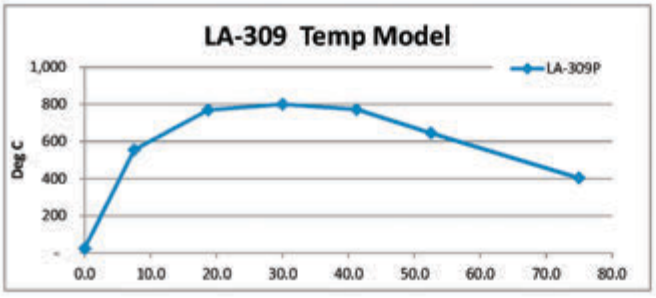
1 per Minute Replenish Rate Flow Setting = 5.0

BALANCE

245.0 scfh difference => Positive pressure in furnace to purge O2
116 sL/m grad 128.3% incr (decr) of inflows over outflows

No.		Location	Label	deg C	Metered Gas	Flowmeter Size L/m	1 per Minute Replenish Rate Flow Setting sL/m grad	Desired Replenish Rate per Minute	Initial Flowmeter Setting scfh grad	Initial Flowmeter Setting sL/m grad
1	BESE	Entrance barrier	ENTRANCE BAFFLE		CDA	100	5.0	1.1	12	5
2	Z1	Heating chamber 1	ZONE 1	800	N2	100	3.2	15.5	105	50
3	Z2	Heating chamber 1	ZONE 2 & 3	800	N2	100	9.6	5.2	106	50
	Z3	Heating chamber 1		800				5.2		
4	TTSE	Exhaust Transition	TRANSITION TUNNEL	660	CDA	100	4.9	1.1	12	5
5	CACT	Cooling section	COOLING		CDA	100	10.4	3.5	77	36
6	HC	Heat chamber sides	LAMP SEALS		N2	100	12.9	2.8	75	36
							46	4.0	386	182

	EXHAUST						distr %	scfh grad	sL/m grad
7	EEBE	Entrance Stack	ENTRANCE STACK		CDA	10	50%	2.1	1.0
8	EETT	Transition tunnel ed	TRANS TUNNEL STACK		CDA	10	50%	2.1	1.0
							100%	10.6	5.0



Furnace Balance	scfh	sL/m
Gas Inflow to furnace	405	191
Gas to Eductors	11	5
Total Gas Required	415	196
- Stack Exhaust Flow	170	80
Net inflow	245	116
	cu ft	L
Furnace internal volume	4	108

PROCESS GAS SUPPLY REQUIREMENTS			Temp °C	Press psi	Gas	scfh	sL/m
1	Gas 1	All furnace areas except CDA Mix except CDA Mix, Heating Chambers Z2 & 3	21	70	N2	149	71
2	Gas 2	CDA Mix, Heating Chambers Z2 & 3	21	70	CDA	147	69
			STP = 21C, 1 atm		Total	297	140

LCI Furnaces — DIVISION OF LOCHABER CORNWALL INC	DATA SHEET	DOC NBR: STD	802-101501	R0
Customer:	IR FURNACE SYSTEM POWER & CURRENT	MODEL: LA-309P	APVL: SLB	3/30/16
		SERIAL NBR: 1303091xxx	CONF: JMC	3/30/16
		PRINT: 06/29/16	SHT 1 of 1	

INPUT TABLE	Entry OK?	VALID		
Enter Line Voltage: (208,220,380,400,415,480)		480	Vac	TRUE
Limit Lamps to Max Rating? (Y/N)		Y		TRUE
Line Frequency (50/60)		60	Hz	TRUE
Number of Phases:		3	Φ	TRUE
Lamp Length (6, 9, 15, 24, 36)		9	inches	TRUE
Typical Operating %		70	%	TRUE

SUMMARY OF RESULTS	
Max Power:	25.3 kW
Max Current:	30.5 A
Typical Power:	17.8 kW@800°C
Typical Current:	21.5 A@800°C

HARDWARE	
Lamps: 28	SCRs: 8
EMs: 12 LEDs	TCs: 3
EM IDC5: n/a	
Nbr strings: 12	
Nbr Lamps in 10" zone: 6	AOV-25: none
	AITM: none

Standard Power configuration

CONFIGURATION	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	Zone 12	Totals
Length (6.6,7.5,10,14.3,15,20,30) in.	7.5	15	7.5										30 in.
Length Entry OK?	TRUE	TRUE	TRUE										
(F)urn., Furn. (1) SCR-Zn, (D)ryer	F	F	F										3
Zone Type OK?	TRUE	TRUE	TRUE										
No. Lamps in Series/String (1-5)	2	3	2										
Lamps/String OK?	TRUE	TRUE	TRUE										
No. Lamps in Top/Bottom Power	4/4 F	6/6 H	4/4 F										Plenum: 120
SCR PHASE Zone Entry OK?	VALID	VALID	VALID										Lamp Balance (kW)
Top Lamp Phase (1/2/3):	1	2	3										Phase 1: 7.2
Bottom Lamp Phase (1/2/3):	1	2	3										Phase 2: 6.8
SCR POWER													Phase 3: 7.2
Rated Lamp Voltage	216	216	216										
Max. Lamp Wired Voltage	216	160	216										
50% Power SCR Cal Span Setting	**305**	**339**	**305**										<-- Vrms
Max. Lamp Wired Power (W)	900	567	900										
No. Strings per SCR	2	2	2										
Max. Current per String (A)	4.2	3.5	4.2										
No. Lamps in Zone	8	12	8										28
No. SCRs in Zone	2	2	2										6
No. Strings in Furnace Zones	4	4	4										12
												Nbr. lamp strings per element monitor:	4
Top Lamp Power (kW)	3.6	3.4	3.6										
Bottom Lamp Power (kW)	3.6	3.4	3.6										
Total Power/Zone (kW)	7.2	6.8	7.2										21.2
Current Required Top SCR (A)	8.3	7.1	8.3										
Current Required Bottom SCR (A)	8.3	7.1	8.3										
Color Temp (K) (nominal: 2500K)	**2500**	**2237**	**2500**										
Peak Wavelength (µm)	**1.16**	**1.29**	**1.16**										
Estimated Lamp Life (hrs)	6000 hr	Long	6000 hr										
Lumen Output vs. Rated (%)	100	38	100										

Furnace Total	Number of Item?	Voltage (Vac)	Current (Amps)	Power (kW) Max	Power (kW) Typical	Phase Assigned	EH in EM? (y/n)	Other Items
Lamps	28	480	as above	21.2	14.8	as above	N	10" Cabinet or CACT Fans, 117 Vac, 0.30/029 A for 50/60 Hz
PC, Monitor	0	117	1.3			1	TRUE	4" Box (Muffin) Fans, product cooling, 117 Vac, 0.16 A
Belt, Opto22, EM	1	117	2.1	0.2	0.2	1		Cross-flow Fans, product cooling, 230 Vac, 1.27 A max
UC (Pump & Gen)		117	10.0					Lower Cabinet Blowers (impellers), 230 Vac, 0.72 A max
UC (Tank Heater)		117	8.4					H2 Igniters, 120 Vac, 5 A — 24 Vdc PS, 120 Vac, 2 A
UCD (Blower)		117	2.0					No more than 8 SCRs/phase per TRx xfmr 24 Vac secondary
UCD (Heater)		480	16.0					TR1: 2 — TR2: 4 — TR3: 2
Edg Htr 1 **Length**	30	480	7.8	3.7	2.6	2	OK	EH1 Ω: 124 — Current: 3.9 A — Cal Span: **339 Vac**
Edg Htr 2 **Length**								EH2 Ω: — Current: — Cal Span:
Edg Htr 3 **Length**								EH3 Ω: — Current: — Cal Span:
Cabinet Vent Fan 10"	2	117	0.29	0.1	0.1	1	OK	Cabinet/CACT/Control Box Fans: 1.16 A
CACT Fans 10"	2	117	0.29	0.1	0.1	1	OK	
CACT Fans 4"	0	117	0.16					
Control Box Fans 4"	0	117	0.16					
Prod Cooling fans		117	0.16					
			Furnace Totals:	**25.3**	**17.8**			

	PHASE BALANCING			TOTAL
PHASE	1	2	3	ALL
LAMP PWR, kW	7.2	6.8	7.2	21.2
EH/OTHER	0.4	2.6	0.0	3.0
TOTAL	7.6	9.4	7.2	24.2

LCI Furnaces
DIVISION OF LOCHABER CORNWALL INC

Customer:

DATA SHEET

IR FURNACE SYSTEM POWER & CURRENT

DOC NBR:	STD - 802-101501-HP		R0
MODEL:	LA-309P	APVL	SLB 3/30/16
SERIAL NBR:	1303091xxx	CONF:	JMC 3/30/16
PRINT:	06/29/16	SHT	1 of 1

INPUT TABLE	Entry OK?	VALID	
Enter Line Voltage: (208,220,380,400,415,480)	480 Vac	TRUE	
Limit Lamps to Max Rating? (Y/N)	Y	TRUE	
Line Frequency (50/60)	60 Hz	TRUE	
Number of Phases:	3 Φ	TRUE	
Lamp Length (6, 9, 15, 24, 36)	9 inches	TRUE	
Typical Operating %	70 %	TRUE	

SUMMARY OF RESULTS	
Max Power:	29.3 kW
Max Current:	35.3 A
Typical Power:	20.6 kW@800°C
Typical Current:	24.8 A@800°C

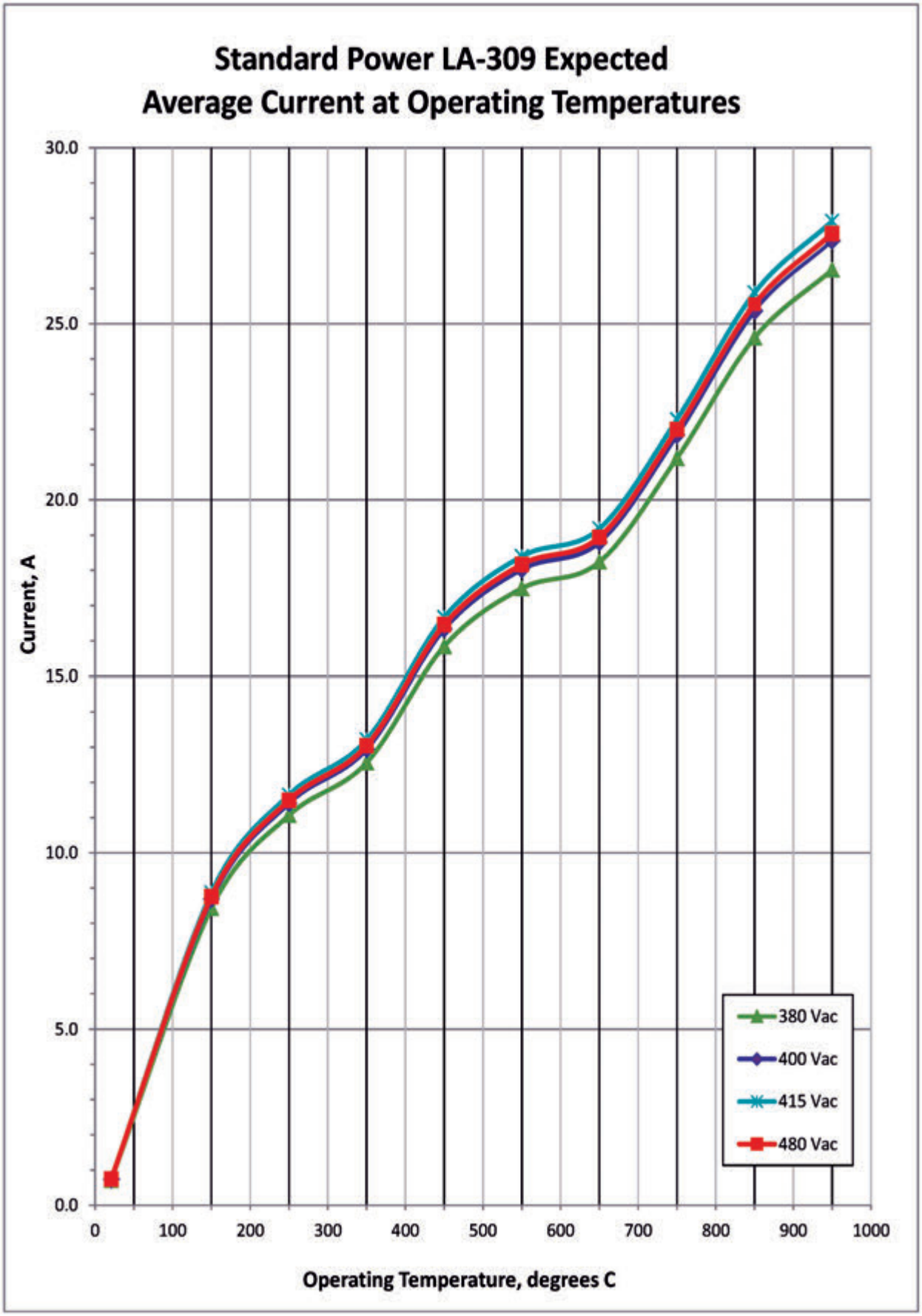
HARDWARE	
Lamps: 28	SCRs: 8
EMs: 14 LEDs	TCs: 3
EM IDC5: n/a	
Nbr strings: 14	
Nbr Lamps in 10" zone: 6	AOV-25: none
	AITM: none

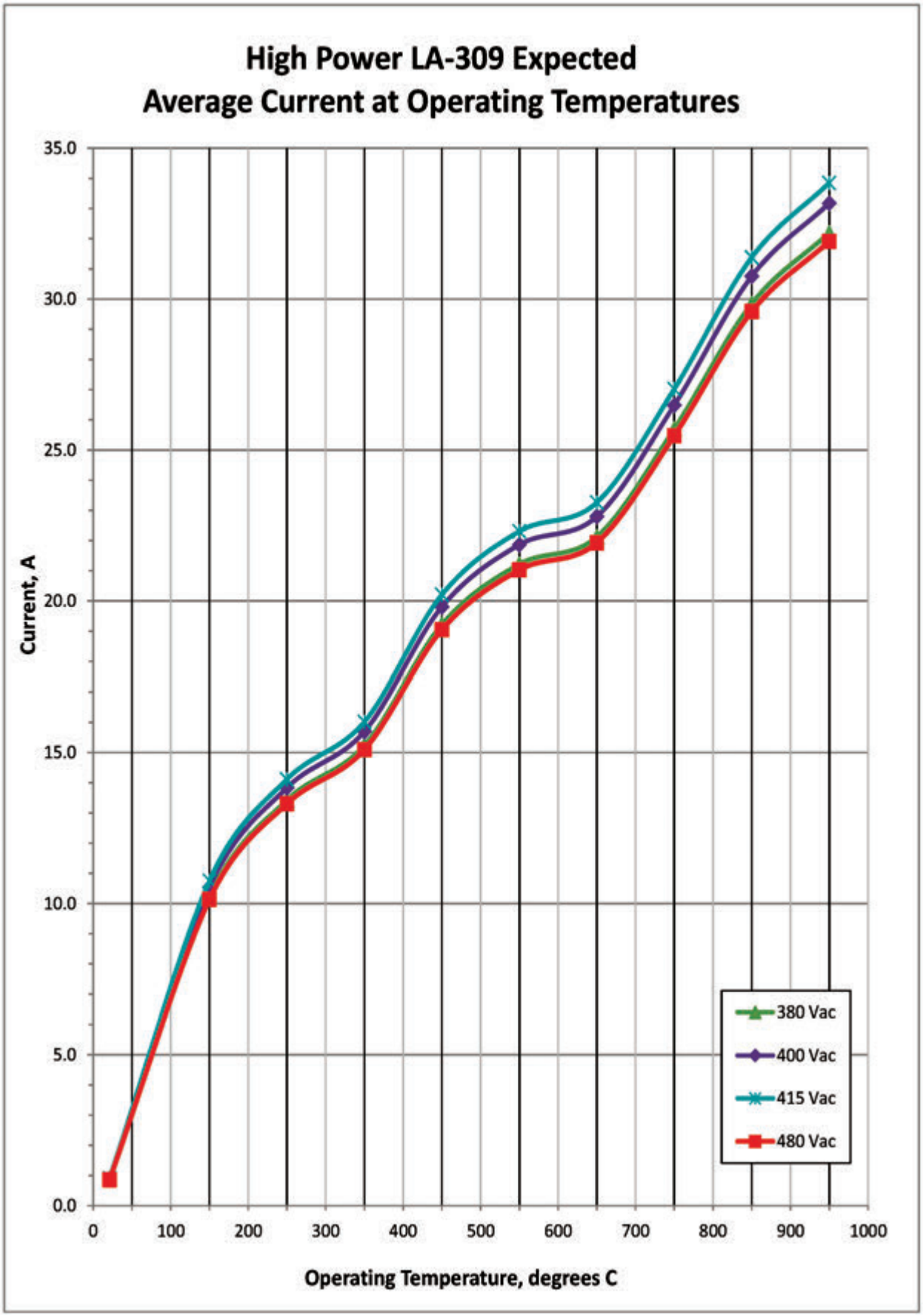
High Power configuration

CONFIGURATION	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	Zone 12	Totals
Length (6.6,7.5,10,14.3,15,20,30) in	7.5	15	7.5										30 in.
Length Entry OK?	TRUE	TRUE	TRUE										
(F)urn., Furn. (1) SCR-Zn, (D)ryer	F	F	F										3
Zone Type OK?	TRUE	TRUE	TRUE										
No. Lamps in Series/String (1-5)	2	2	2										
Lamps/String OK?	TRUE	TRUE	TRUE										
No. Lamps in Top/Bottom	4/4	6/6	4/4										Plenum:
Power	F	F	F										120
SCR PHASE Zone Entry OK?	VALID	VALID	VALID										Lamp Balance (kW)
Top Lamp Phase (1/2/3):	1	2	3										Phase 1: 7.2
Bottom Lamp Phase (1/2/3):	1	2	3										Phase 2: 10.8
SCR POWER													Phase 3: 7.2
Rated Lamp Voltage	216	216	216										<-- Vrms
Max. Lamp Wired Voltage	216	216	216										
50% Power SCR Cal Span Setting	**305**	**305**	**305**										
Max. Lamp Wired Power (W)	900	900	900										
No. Strings per SCR	2	3	2										
Max. Current per String (A)	4.2	4.2	4.2										
No. Lamps in Zone	8	12	8										28
No. SCRs in Zone	2	2	2										6
No. Strings in Furnace Zones	4	6	4										14
												Nbr. lamp strings per element monitor:	4
Top Lamp Power (kW)	3.6	5.4	3.6										
Bottom Lamp Power (kW)	3.6	5.4	3.6										
Total Power/Zone (kW)	7.2	10.8	7.2										25.2
Current Required Top SCR (A)	8.3	12.5	8.3										
Current Required Bottom SCR (A)	8.3	12.5	8.3										
Color Temp (K) (nominal: 2500K)	**2500**	**2500**	**2500**										
Peak Wavelength (µm)	**1.16**	**1.16**	**1.16**										
Estimated Lamp Life (hrs)	6000 hr	6000 hr	6000 hr										
Lumen Output vs. Rated (%)	100	100	100										

Furnace Total	Number of Item?	Voltage (Vac)	Current (Amps)	Power (kW) Max	Power (kW) Typical	Phase Assigned	EH in EM? (y/n)	Other Items
Lamps	28	480	as above	25.2	17.6	as above	N	10" Cabinet or CACT Fans, 117 Vac, 0.30/029 A for 50/60 Hz
PC, Monitor	0	117	1.3			1	TRUE	4" Box (Muffin) Fans, product cooling, 117 Vac, 0.16 A
Belt, Opto22, EM	1	117	2.1	0.2	0.2	1		Cross-flow Fans, product cooling, 230 Vac, 1.27 A max
UC (Pump & Gen)		117	10.0					Lower Cabinet Blowers (Impellers), 230 Vac, 0.72 A max
UC (Tank Heater)		117	8.4					H2 Igniters, 120 Vac, 5 A 24 Vdc PS, 120 Vac, 2 A
UCD (Blower)		117	2.0					No more than 8 SCRs/phase per TRx xfmr 24 Vac secondary
UCD (Heater)		480	16.0					TR1: 2 TR2: 4 TR3: 2
Edg Htr 1 **Length**	30	480	7.8	3.7	2.6	2	OK	EH1 Ω: 124 Current: 3.9 A Cal Span: **339 Vac**
Edg Htr 2 **Length**								EH2 Ω: Current: Cal Span:
Edg Htr 3 **Length**								EH3 Ω: Current: Cal Span:
Cabinet Vent Fan 10"	2	117	0.29	0.1	0.1	1	OK	Cabinet/CACT/Control Box Fans: 1.16 A
CACT Fans 10"	2	117	0.29	0.1	0.1	1	OK	
CACT Fans 4"	0	117	0.16					
Control Box Fans 4"	0	117	0.16					
Prod Cooling fans		117	0.16					
			Furnace Totals:	**29.3**	**20.6**			

	PHASE BALANCING			TOTAL
PHASE	1	2	3	ALL
LAMP PWR, kW	7.2	10.8	7.2	25.2
EH/OTHER	0.4	2.6	0.0	3.0
TOTAL	7.6	13.4	7.2	28.2


Standard Power LA-309 Expected
Average Current at Operating Temperatures
Current, A
30.0
25.0
20.0
15.0
10.0
5.0
0.0
0
100
200
300
400
500
600
700
800
900
1000
Operating Temperature, degrees C
380 Vac
400 Vac
415 Vac
480 Vac


High Power LA-309 Expected
Average Current at Operating Temperatures
Current, A
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
0
100
200
300
400
500
600
700
800
900
1000
Operating Temperature, degrees C
380 Vac
400 Vac
415 Vac
480 Vac