

10089-1E-V18-MCCA-00005  
YG-IHI-CAC-001

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**Supplier Document Status**  
CODE: 1

Code 1 = Work may proceed  
Code 2 = Revise and resubmit. Work may proceed subject to resolution of indicated comments.  
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Responsible Engineer - Ashoub, Abdel Re  
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REV	DATE	DESCRIPTION	DES.	CHK.	AUD.

CAIRO WEST SUPERCRITICAL POWER STATION

1 x 650 MW

10089-CP-118 MECHANICAL EQUIPMENT / PIPE INSTALLATION



CAIRO ELECTRICITY PRODUCTION COMPANY



POWER GENERATION ENGINEERING AND SERVICES COMPANY



中国能建江苏电建一公司  
ENERGY CHINA JEPCC1

China Energy Engineering Group Jiangsu  
No.1 Electric Power Construction Co., Ltd




IHI-SULLAIR

IHI-SULLAIR COMPRESSION TECHNOLOGY(SUZHOU) CO., LTD

Specification 10089-1E-3PS-M00Z-00007	10089-1E-3PS-MCCA-00001/ 1.09 & 1.10 & 1.11				
Appendix A Item No.:					
Document Title:	Completed Data Sheet for Air Compressors, Air Dryers and Air Receivers				
PGESCo. Document No.	10089-1E-V18-MCCA-00005				
Document No.	YG-IHI-CAC-001			REV. 3	

PROJECT	Cairo West Power Station			
SERVICE:	Instrument air			
EQUIPMENT NUMBER(s):	1E-PI-MC001A/B/C			
QUANTITY:	3			
AIR QUALITY: (Oil Free )	(Yes/No)	Yes		
AIR DELIVERY: Specified / Bid	(Nm³/hr)	2700 (Note 4)	2767*	
ACTUAL AIR DELIVERY AT SITE CONDITIONS	(m³/hr)	≥3033		
MAXIMUM ALLOWABLE WORKING PRESSURE	(barg)	10.3		
OPERATING PRESSURE: Starting / Unloading	(barg)	6.5	9.6	
ALTITUDE ABOVE SEA LEVEL	(m)	Refer to Spec 10089-3PR-G01-00001		
ABSOLUTE AMBIENT TEMPERATURE: MIN./ MAX.	(°C)	Refer to Spec 10089-3PR-G01-00001		
RELATIVE HUMIDITY ( % at °C)		Refer to Spec 10089-3PR-G01-00001		
COMPRESSOR EFFICIENCY: @ RATED CONDITIONS (%)		68		
COMPRESSOR BRAKE HORSEPOWER: RATED CONDITIONS / MAX CONDITIONS (KW)		≤345	≤353	
TYPE OF COMPRESSOR:		CENTRIFUGAL (OIL FREE)		
NUMBER OF STAGES:		3		
Isothermal EFF.: 1st Stage / 2nd Stage	(%)	68		
AIR TEMPERATURE LEAVING COMPRESSOR:	(°C)	45		
Cooling Type		WATER COOLED		
Cooling Water (Note 2)				
Flow rate	(m³/hr)	40(with after cooler)		
Temperature: Inlet / Outlet	(°C)	35	43	
Pressure Drop: Max. / Design	(bar)	0.15 / 0.1		
Pressure: Operating / Design	(barg)	Refer to Spec 10089-3PR-G01-00001	Refer to Spec 10089-3PR-G01-00001	
Tube Material		stainless steel		
Cooler's Heat Duty	(Kw)	420		
COOLING AIR FAN				
Cooler Fan Capacity / Pressure	(m³/hr)/(mm H₂O.)	N/A	N/A	
Fan Pressure Available For Customer Ducting	(mm H₂O)	N/A		
SPEED:	(rpm)	2960		
Maximum Allowable Noise Level		Refer to Spec 10089-3PR-G01-00001		
LUBRICATION SYSTEM TYPE:		Forced		
MATERIAL: Casing:		FCD450		
Rotating elements		ALLOY STEEL		
BEARING TYPES: Radial / Axial		5-PAD TILTING BEARTING	THRUST DOLLAR*	
SHAFT SEAL TYPE:		Non-Contact Carbon Ring cartridge type		
CONNECTIONS:				
Air Discharge: Size (mm) / Type / Rating/ Facing		125	ANSI Flange	150# RF
Cooling Water Inlet: Size (mm) / Type / Rating/ Facing		100	ANSI Flange	150# RF
Cooling Water Outlet: Size (mm) / Type / Rating/ Facing		100	ANSI Flange	150# RF
INTAKE FILTER - SILENCER: Mfr. / Type		IHI-SULLAIR	Dry type	
Size / Model No.		2297X1100X1100	TRA *	
Particle Removal (microns)		> 5		
DRIVER:				
Motor Type	Rated Kilowatts	Induction	335	
Voltage	Frequency	6600 V	50 Hz	
Total Combined Compressor /Motor Power Required: Guarantee (Kw )		326 (G) Note 3		
Control Panel NEMA Rating		NEMA 4X or IP 66 with corrosion protection		
TOTAL WR² IN COMPRESSOR:	(kgs-m²)	69.2		
ACCESSORIES:		IHI-SULLAIR		
LOCATION		indoors		
SEISMIC DESIGN		Refer to specification 10089-3PR-G01-00001		
MANUFACTURER:		IHI-SULLAIR		
MODEL NUMBER:		TRA		
P&ID Number		10089-1E-M6-PI-00001		
WEIGHT: COMPRESSOR / HEAVIEST PIECE	(kgs)	7020	2740	
Note: 1. Contractor to fill all (*) data, N/A if not Applicable				
2. The cooling water contains corrosion inhibitor. (Refer to Spec 10089-3PR-G01-00001)				
3. The Guarantee conditions are 9.6 barg discharge pressure, max. ambient temperature as per spec. 10089-1E--3PR-G01-00001, and rated speed				
4. Calculated based on Normal conditions are 1.013 bar, 20 °C, 1.205 kg/m³ .				

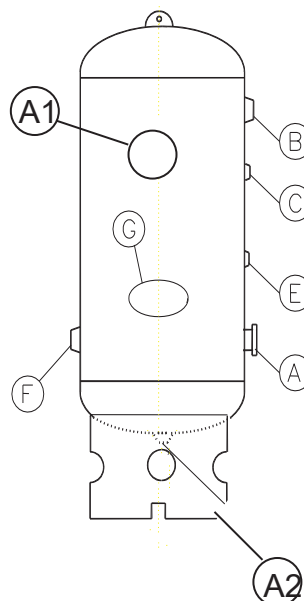
	<b>EQUIPMENT DATA SHEET</b> <b>AIR COMPRESSOR</b> <b>FOR</b> <b>CAIRO WEST SUPERCRITICAL POWER PLANT</b> <b>1X650 MW</b>	Job No. 10089	
		Specification 10089-1E-3PS-MCCA-00001	Rev. 3
		Appendix B	
		Sheet B-1 of 3	

### NOZZLE SCHEDULE

MK	SIZE, mm	TYPE	RATING	QTY	FUNCTION	MK on Dwg. (Note 4)
A1	125 mm	FLG.	150# RF	1	Outlet (Note 3)	d
A2	125 mm	FLG.	150# RF	1	Inlet (Note 3)	a
B	50 mm	FLG.	150# RF	1	Relief Valve	b
C	1/2"	NTP	3000#	1	Pressure Indicator	c
D	3/4"	NTP	3000#	1	Drain	f
E	150mm	FLG.	150# RF	1	Spare	g <sub>1</sub>
F	150mm	FLG.	150# RF	1	Spare	g <sub>2</sub>
G	300*400	NA	NA	1	Manway (Note 2)	e
H	150mm	FLG.	150# RF	1	Spare	g <sub>3</sub>

#### Notes

- Contractor to add nozzles as necessary
- Manway to be provided if required by ASME Code
- The inlet and outlet should be oriented at a 90-degree angle to help prevent moisture carryover.
- Please refer to 10089-1E-V18-MCCA-00009




Nozzle and boss locations are schematic only. Final arrangement will be marked on Contractor's drawings.


SHELL: MTL / THICKNESS (mm):	SA-516 Gr.485	12mm	DESIGN / OPERATING PRESS. (barg)	10.3	6.5 to 9.6
HEAD: MTL / THICKNESS:	SA-516 Gr.485	12mm	DESIGN / OPERATING TEMP. (°C)	85	45
INTERNALS (TRAYS ETC):	NA		SV SETTING / HYDRO PRESS (barg)	10	13.65
INSULATION CLIPS:	NA		CORROSION ALLOWANCE (mm):	1.6 mm	
Coating: Interior	NA		FLANGE RATING / FACING	150#	RF
Exterior	Per Spec.		FITTINGS RATING:	3000#	
	99999-9-3SS-NX00-00003				
MANUFACTURER:	TAIHU		JOINT EFF. SHELL / HEAD:	0.85 / 0.85	
WEIGHT: (kg): Empty / Flooded	2679/12679		STRESS RELIEVED / RADIO GRAPHY	Per Code	Per Code
OUTSIDE DIAMETER (mm)	1824		WIND LOADING:	As Per G01 Spec	
ACCESSORIES: Relief Valve, Pressure Gauge with Isolation Valve, Drain Trap, strainer with Bypass and Isolation Valves.			SEISMIC DESIGN	As Per G01 Spec	
			APPLICABLE CODES/STANDARDS:	ASME Section VIII Div.1	
			CODE STAMP:	Yes	
			LOCATION	indoor	
WELDING SPECIFICATION	Per ASME CODE		EQUIP TAG NOS:	1E-PI-MT-001/002	
OVERALL HEIGHT	4720		P&ID NO.:	1E-M6-PI-00001	
CAPACITY (m <sup>3</sup> )	10 (Per each receiver)				
QUANTITY:	2				

#### Note:

- Contractor to fill all (\*) data, N/A if not Applicable
- Fixation shall be through expansion / chemical bolts.

	<b>EQUIPMENT DATA SHEET</b> <b>AIR RECIEVER</b> <b>FOR</b> <b>CAIRO WEST SUPERCRITICAL POWER STATION</b> <b>1X650 MW</b>	Job No. 10089	
		Specification 10089-1E-3PS-MCCA-00001	Rev.3
		Appendix B	
		Sheet B-2 of 3	

INLET CONDITIONS TO DRYER		
FLOW (Max.)	(Nm <sup>3</sup> /min)	58
PRESSURE (Max.)	(barg)	9.6
TEMPERATURE	(°C)	42
HUMIDITY	(%)	100
OUTLET CONDITIONS FROM DRYER		
NET OUTPUT FLOW RATE	(Nm <sup>3</sup> /hr)	2250(Note 2)
DEWPOINT AT OUTLET PRESSURE	(°C)	- 40
MAX PRESSURE DROP (Including filters)	(bar)	0.34
AVERAGE PURGE FLOW RATE	(Nm <sup>3</sup> /hr)	≤450
MAXIMUM ALLOWABLE NOISE LEVELS	( _ dBA at _ m)	Refer to specification 10089-1E-3PR-G01-00001
POWER AVAILABLE FOR CONTROLS	VOLTS/PHASE/HERTZ	220      1      50
AIR PRESSURE AVAILABLE FOR CONTROLS	(barg)	N/A
Outlet TEMPERATURE(°C)		45
DESIGN PRESSURE	(barg)	10.3
CODE REQUIREMENTS / CODE STAMP		Yes      ASME Sec. VIII Div.1
WIND LOAD REQUIREMENTS		Refer to specification 10089-1E-3PR-G01-00001
SEISMIC DESIGN FORCES		Refer to specification 10089-1E-3PR-G01-00001
NOZZLE LOADS: FORCES / MOMENTS		
AIR INLET		DN150
AIR OUTLET		DN150
CONNECTIONS: INLET	SIZE (MM)/TYPE , RATING/FACING	DN150/RF      CLASS150*
OUTLET	SIZE (MM)/TYPE , RATING/FACING	DN150/RF      CLASS150
DRYER		
MANUFACTURER / MODEL NUMBER		APUREDA      RGDN-650
EQUIPMENT NUMBERS		1E-PI-MS001A/B
QUANTITY (Skids)		2
FILTER ARRANGEMENT		See 10089-1E-V18-MCCA-00008
FILTER DIFFERENTIAL PRESSURE INDICATORS ISOLATABLE		YES
COATING SYSTEM		As Per Spec. 99999-9-3SS-NX00-00003
PREFILTER		
MANUFACTURER / MODEL NUMBER		APUREDA      AM3900-AR
RATING: LIQUID REMOVAL	(%)	99.99
PARTICLE REMOVAL	(microns)	1
EQUIPMENT NUMBERS		1E-PI-MF-001A/B & 1E-PI-MF-002A/B
QUANTITY		2
AFTERFILTER		
MANUFACTURER / MODEL NUMBER		APUREDA      AM3900-AR
RATING: PARTICLE REMOVAL	(microns)	1
EQUIPMENT NUMBERS		1E-PI-MF-003A/B & 1E-PI-MF-004A/B
QUANTITY		2
P&ID NUMBER(s)		10089-1E-M6-PI-00001
LOCATION		indoor
MANUFACTURER		APUREDA
MODEL NUMBER		RGDN-650
WIEGHT (kg)		3000 
Note: 1. Contractor to fill all (*) data, N/A if not Applicable		
2. Calculated based on Normal conditions are 1.013 bar, 20 °C, 1.205 kg/m <sup>3</sup> .		

	EQUIPMENT DATA SHEET		Job No. 10089	
	AIR RECIEVER		Specification	Rev.3
	FOR		10089-1E-3PS-MCCA-	
	CAIRO WEST SUPERCRITICAL POWER STATION		00001	
	1X650 MW		Appendix B	
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