



LETTER OF TRANSMITTAL FOR VENDOR DOCUMENTS

To Chief Engineer (P&P), Prakashgad, 3rd floor, Bandra (East) Maharashtra State Power Generation Company Limited (MAHAGENCO), Mumbai -400051	JOB NO: TCE. 6846A	BHEL REF: RM/Koradi/2016/095 & 98
	CLIENT: MAHARASHTRA STATE POWER GENERATION COMPANY LIMITED	DATE: 28.04.16 & 12.05.2016
	PROJECT: EE R&M OF 210 MW UNIT-6 OF KORADI THERMAL POWER STATION.	OUR REF: TCE.6846A-EL-BHEL-VDT-205 DATE: 24-06-2016
	SUBJECT: GA of LPBS & UPS Sizing calculation	SH 1 OF 2

Attn: **Mr. Vikas M. Jaideo Chief Engineer (P&P), Mr. Raut**

We are here in conveying our approval/comments on the documents listed below. Approval/comments conveyed herein neither relieves the vendor/contractor of his contractual obligations and his responsibilities for correctness of dimensions, materials of construction, weights, quantities, design details, assembly fits, performance requirements and conformity of the supplies with the Indian Statutory Laws as may be applicable, nor does it limit the purchaser's rights under the contract.

Yours faithfully
For TATA Consulting Engineers Limited

VEENA RAVISHANKAR
Project Manager

<u>CODES</u>	
A: Document approved as submitted; proceed with fabrication/construction.	F: Correct original of the document to reflect our comments and resubmit for records.
B: Document approved subject to comments noted; proceed with fabrication/construction considering our comments.	G: Documents of this category are for information only and not for approval. Information furnished on the document is noted.
C: Our comments are noted on the enclosed marked-up print.	H: Document reviewed only against our previous comments and other revisions highlighted and identified by the vendor.
D: Our comments are noted in the memo attached to this transmittal.	I: Document returned without review.
E: Correct original of the document to reflect our comments and resubmit for approval.	J: Print not enclosed.

SL. NO.	VENDOR'S DOCUMENT NO.	TITLE	REV. NO	CODE
1.	STN 1528-B	GA of LPBS & UPS Sizing calculation	R0	A, J
2.	4-726-29-40-125	UPS Sizing calculation	R0	A*, J

*Document is approved subject to compliance with the comment indicated in the memo.

TATA CONSULTING ENGINEERS LIMITED

Sheriff Centre 73/1 St Marks Road Bangalore 560 001
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Registered Office Matulya Centre A 249 Senapati Bapat Marg Lower Parel (West) Mumbai 400 013



LETTER OF TRANSMITTAL FOR VENDOR DOCUMENTS

BHEL REF: Mail	DATE: 28-04-2016 & 12-05-216	SH 2 OF 2
OUR REF.: TCE.6846A-EL-BHEL-VDT-205	DATE: 24-06-2016	

MEMO

UPS Sizing calculation:

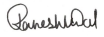
1. BHEL shall ensure that all necessary loads have been considered for the sizing calculation. It's the responsibility of BHEL to finalize the UPS of adequate capacity of for the CPU system.

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REV NO.	DATE	REMARKS	PRE. BY	CHK. BY	
0	11.03.2016	SUBMITTED FOR APPROVAL	RK	PK	
1	01.04.2016	SUBMITTED FOR APPROVAL	RK	PK	
2	10.05.2016	SUBMITTED FOR APPROVAL	RK	PK	
APPROVED  राकेश मंडल / RAKESH MONDAL सॉफ्टवेयर इंजीनियर / Sr. Engineer नवीकरण एवं अनुसंधान प्रणाली समूह R & M Systems Group बी.एच.ई.एल., भोपाल / BHEL, BHOPAL			PROJECT	EE R&M, UNIT -6 (1 X 200 MW) KORADI TPS	
			END USER	KORADI THERMAL POWER STATION, MAHAGENCO	
			CONSULTANT	TATA CONSULTING ENGINEERS LTD.	
			CLIENT		BHARAT HEAVEY ELECTRICALS LTD., BHOPAL
			CONTRACTOR		Aqua Designs India Private Ltd., Off 200 feet Road, Kolathur, Chennai - 600099
			TITLE	UPS SIZING CALCULATION	
			BHEL DOC. NO.	4-726-29-40-125	REV. NO. 00
			ADIPL DOC. NO.	ADIPL-BHEL-CPU-C&I-009	TOTAL SHEET 3

END USER	Ms. MAHAGENCO - KORADI THERMAL POWER STATION.					
CLIENT	M/s. BHEL - BHOPAL.					
CONSULTANT	M/s. TATA CONSULTANT ENGINEERS LTD.					
CONTRACTOR	M/s. AQUA DESIGNS INDIA PVT LTD.					
PROJECT	2 X 50 M3/HR CONDENSATE POLISHING UNIT FOR (6x210MW) THERMAL POWER STATION					
ADIPL DOCUMENT NO.	ADIPL-BHEL-CPU-C&I-009					
BHEL DOCUMENT NO.	4-726-29-40-125					
REVISION NO.	0					
DATE	10.05.2016					
POWER CONSUMPTION CALCULATION FOR UPS LOAD						
EQUIPMENT LOAD						
S.NO	ITEM	QTY	CURRENT CONSUMPTION (A)	TOTAL CURRENT CONSUMPTION (A)	VOLTAGE SOURCE (230V AC/24V DC)	POWER (VA)
1	PLC LOAD AS FOLLOWS (24V DC POWER SUPPLY, 10A - 8 Nos.)	8	10.00	80.00	24.00	1,920.00
1.1	CPU (REDUNDANT PROCESSOR)	4	0.80			
1.2	RELAY BOARD	12	0.15			
1.3	DI MODULE (32 CHANNEL)	7	0.10			
1.4	DO MODULE (32 CHANNEL)	3	0.50			
1.5	AI MODULE (12 CHANNEL)	4	0.05			
1.6	AO MODULE (12 CHANNEL)	2	0.32			
2	OTHER ACCESSORIES (24V DC)	1	1.00	1.00	24.00	230.00
3	FIELD INSTRUMENTS (24V DC)					
3.1	PRESSURE TRANSMITTER	6	0.02	0.12	24.00	2.88
3.2	TEMPERATURE TRANSMITTER	4	0.020	0.08	24.00	1.92
3.3	FLOW TRANSMITTER	5	0.02	0.10	24.00	2.40
3.4	DIFFERENTIAL PRESSURE TRANSMITTER	2	0.02	0.04	24.00	0.96
3.5	AUTO VALVES	61	0.3	18.30	24.00	439.20
4	230V POWER SUPPLY					
4.1	DESKTOP PC	2	2.50	5.00	230.00	1,150.00
4.2	PRINTER	2	1.20	2.40	230.00	552.00
4.3	HOOTER	1	0.10	0.10	230.00	23.00
4.4	INDICATION LAMP	5	0.10	0.50	230.00	115.00
4.5	COOLING FAN - 4"	10	0.08	0.75	230.00	172.50
TOTAL VA AT 230V AC						4,609.86
INSTRUMENT LOAD						
S.NO	ITEM	QTY	CURRENT CONSUMPTION (A) @ 230VAC	TOTAL CURRENT CONSUMPTION (A) @ 230VAC	VOLTAGE SOURCE (230V AC/24V DC)	POWER (VA)
1	CAPACITANCE TYPE LEVEL SWITCHES	5	0.06	0.30	230.00	69.00
2	CONDUCTIVITY TRANSMITTERS	8	0.25	2.00	230.00	460.00
3	pH TRANSMITTERS	2	0.25	0.50	230.00	115.00
4	SILICA ANALYSERS	1	0.30	0.30	230.00	69.00
TOTAL VA AT 230V AC						713.00
Note: The Equipment and Instrument VA rating mentioned above is tentative, after Panel and Instruments finalization final rating shall be provided.						

POWER CONSUMPTION CALCULATION FOR UPS LOAD

S.No	Description	Value	Units
1	System Parameter		
(i)	Input voltage	415 +/- 10%	V
(ii)	Input Frequency	50 +/- 2.5 %	Hz
(iii)	Output Voltage of the inverter	230 +/- 1%	V
(iv)	Output frequency of the inverter	50 +/- 1%	Hz
2	Sizing Calculations		
a)	UPS Load		
(i)	Equipment Load	4610	VA
(ii)	Instrument Load	713	VA
b)	Total Load Requirement	5323	VA
c)	Considering 20% Future Growth in Load, the total load	6387	VA
d)	UPS Rating in KVA	6.4	KVA
Result :			
Hence, based on the above sizing, 8 KVA, 1 hrs Power backup UPS shall be selected for this specification			