ONGC TRIPURA POWER COMPANY LIMITED

TECHNICAL SPECIFICATION

FOR

220 VDC 656 AH and 300AH;
48VDC 120AH and
110VDC 45AH
NICKEL-CADMIUM STATIONARY BATTERIES

Technical Details for Block-1 220V Unit Battery Bank

Item Description

1.2VDC KPH 656Ah Capacity Vented Ni-Cd High Discharge Type Pocket Plate Cells with Electrolyte, ICC's, Battery and Standard Accessories Specification.
Location: Block-1 Unit Battery Bank.

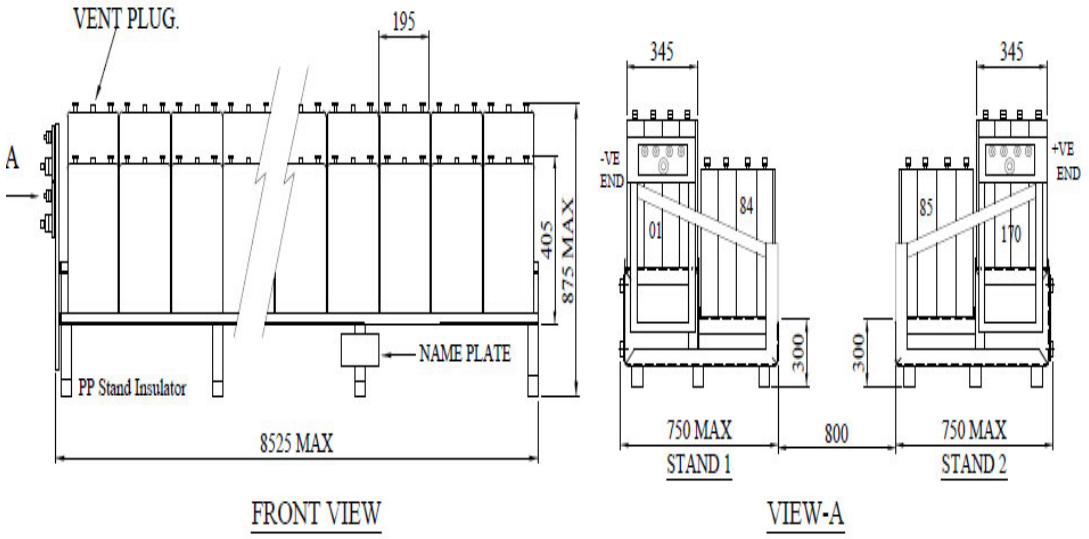
Technical Specification

1. Total Batteries in one Battery Bank: 170Nos
2. Total Number of Battery Bank: 01Nos.
3. Total Batteries installed which requires to be replaced: 170Nos.
4. KPH Series Battery
5. Battery Nominal Voltage: 1.2VDC
6. Battery Capacity (C5): 656Ah
7. Cell Dimensions: Length: 345mm, Breadth: 195mm, Height: 405mm
8. Approx. Cell Weight: 48.6 Kg
9. Electrolyte Volume per cell: 12Ltrs
10. Terminal Details: 4XM10
11. With Standard Accessories- Copper Inter Cell Connectors, Copper Pole Connectors and Electrolyte.

Battery type	C_5 Ah	05 Hours	03 Hours	02 Hours	01 Hours	30mins	15mins	10mins	5mins	1min
KPH 656P	656	131	215	319	616	1117	1730	2038	2543	3689

Quantity Required

Total Cells to be procured is 190 Nos on Buy Back Policy.
Total Cells in Battery Bank is 170Nos.
Extra 20Nos of Battery to be kept as spare.



FRONT VIEW

VIEW-A

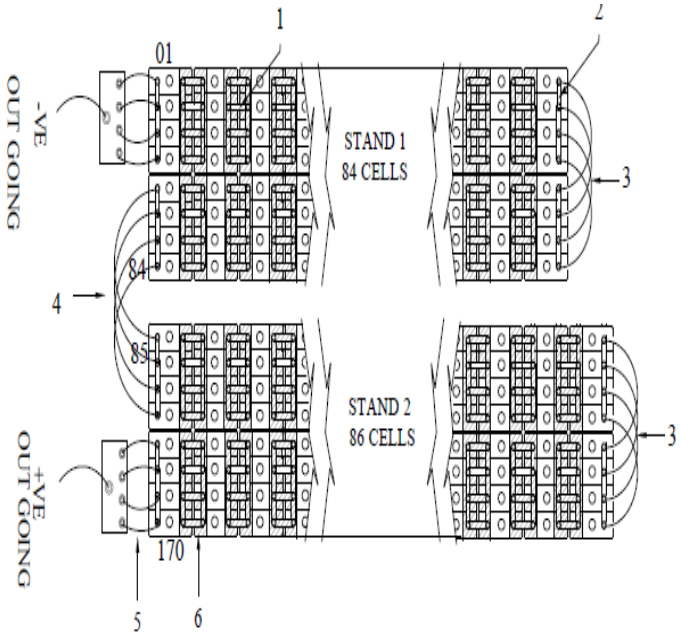
NO. OF BATTERIES	: 1 SET
NO. OF CELLS PER BATTERY	: 170
CELL TYPE	; KPH 656 P
CELL LENGTH	: 345
CELL WIDTH	: 195
CELL HEIGHT	: 405
CELL CONTAINER	: POLYPROPYLENE.
NO. OF STANDS	: 2/SET
STAND TYPE	: 2STEP ONE TIER
STAND MATERIAL	: MILD STEEL.
STAND COATING	: POWDER COATED ALKALI RESISTANT HAVING RAL 7032 SHADE

END TERMINATION WILL BE COVERED WITH ACRYLIC SHROUDS

THERE SHOULD BE MIN 800 mm SPACE on ALL AROUND THE STAND FOR MAINTENANCE PURPOSE.

2021		Date	Initial
Dimensions in mm	Designed	27.12.2021	PS
Scale N.T.S	Checked	27.12.2021	VGK
	Approved	27.12.2021	JP
Description : GENERAL ARRANGEMENT DRAWING 170 CELLS X KPH 656 P			

GAD of 170Cells * KPH 656Ah Batteries



SL. NO.	DESCRIPTION	QTY
1	SOLID COPPER INTERCELL CONNECTOR (NiPl)	664
2	SOLID COPPER INTERPOLE CONNECTOR (NiPl)	340
3	70 Sq FLEXIBLE COPPER CONNECTOR WITH M10 LUG - 500 mm L	08
4	70 Sq FLEXIBLE COPPER CONNECTOR WITH M10 LUG - 2500 mm L	04
5	70 Sq FLEXIBLE COPPER CONNECTOR WITH M10 LUG - 350 mm L	08
6	PVC TERMINAL COVER	166

REFER DRG No. T021G-537-2 FOR GENERAL ARRANGEMENT DRG.

2022		Date	Initial
Dimensions in mm	Designed	17.01.2022	PG
Scale N.T.S	Checked	17.01.2022	VBV
	Approved	17.01.2022	JP
Description : CONNECTON DETAILS 170 CELLS X KPH 656 P			

Connection Drawing of 170 Cells * KPH 656Ah Batteries

Technical Details for River Intake PLC System 110V UPS Battery Bank

Item Description

1.2VDC KPM 45P Capacity Vented Ni-Cd High Discharge Type Pocket Plate Cells with Electrolyte, ICC's, Battery and Standard Accessories Specification.
Location: River Water Intake System PLC UPS 110V Battery Bank

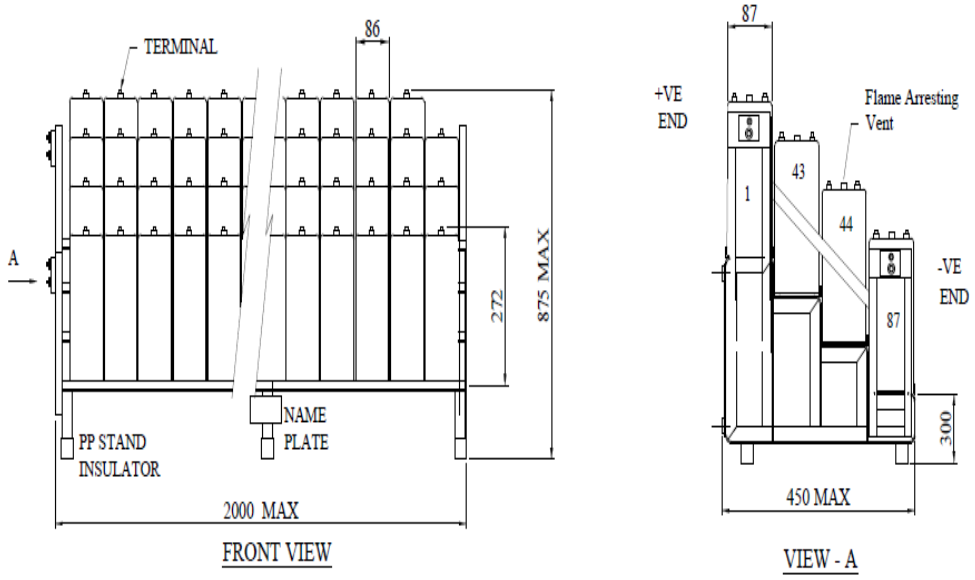
Technical Specification

1. Total Batteries in one Battery Bank: 87Nos
2. Total Number of Battery Bank: 01Nos.
3. Total Batteries installed which requires to be replaced: 87Nos.
4. KPM Series Battery
5. Battery Nominal Voltage: 1.2VDC
6. Battery Capacity (C5): 45Ah
7. Cell Dimensions: Length: 86mm, Breadth: 87mm, Height: 272mm
8. Approx. Cell Weight: 3.3 Kg
9. Electrolyte Volume per cell: 1Ltrs
10. Terminal Details: M10
11. With Standard Accessories- Copper Inter Cell Connectors, Copper Pole Connectors and Electrolyte.

Battery type	C_5 Ah	05 Hours	03 Hours	02 Hours	01 Hours	30mins	15mins	10mins	5mins	1min
KPM 45P	45	9	14.7	21.5	38.7	57.9	74.9	85.7	103	144

Quantity Required

Total Cells to be procured is 105 Nos on Buy Back Policy.
Total Cells in Battery Bank is 87Nos.
Extra 18Nos of Battery to be kept as spare.



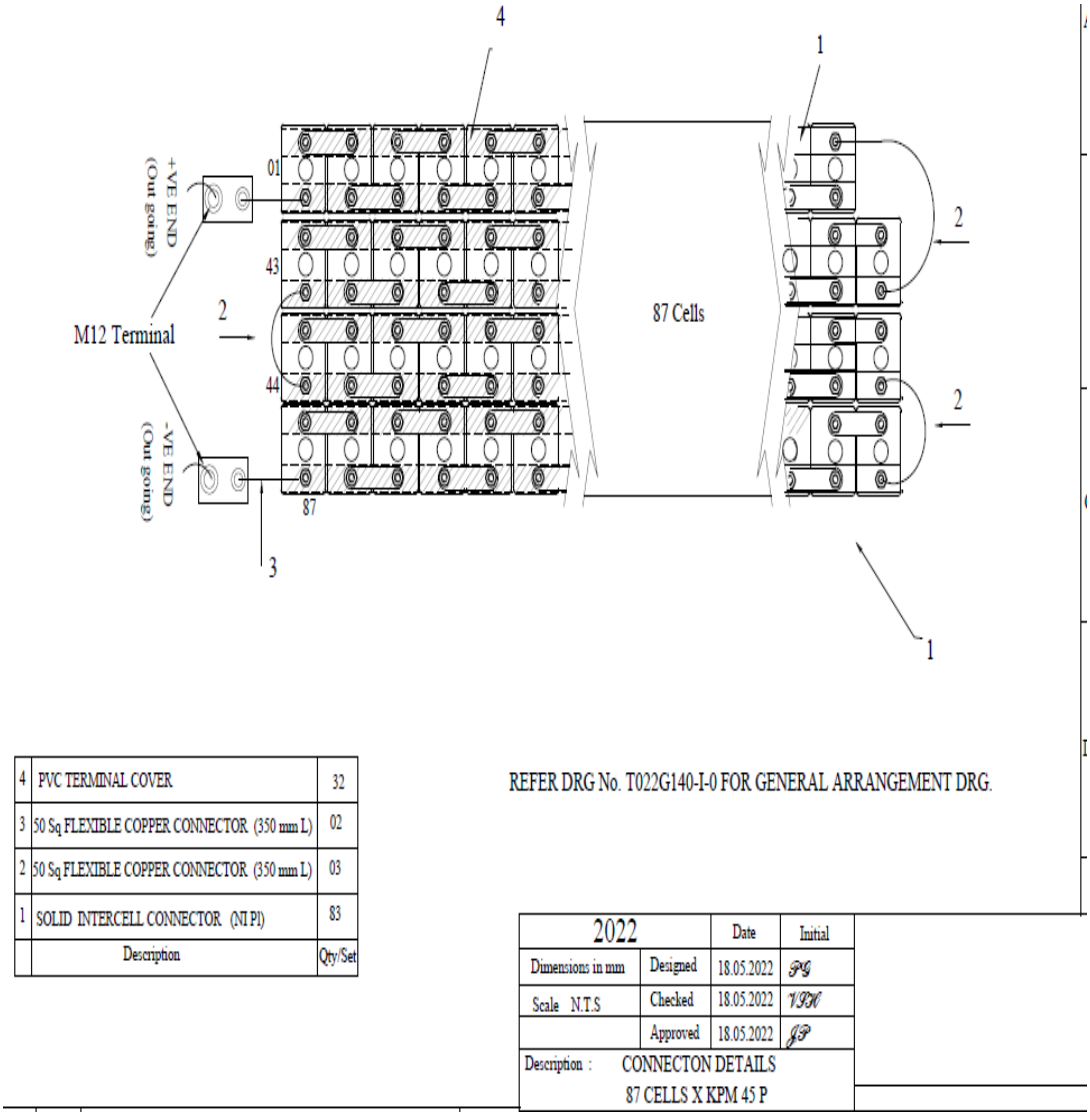
NO OF BATTERY	: 1 SET
NO. OF CELLS PER BATTERY	: 87
CELL TYPE	: KPM 45 P
CELL LENGTH	: 86
CELL WIDTH	; 87
CELL HEIGHT	: 272
CELL CONTAINER	: POLYPROPYLENE.
NO. OF STANDS	: 1/SET
STAND TYPE	: 4 STEP SINGLE TIER
STAND MATERIAL	: MILD STEEL.
STAND COATING	: POWDER COATED ALKALI RESISTATNT HAVING RAL 7035 SHADE

END TERMINATION WILL BE COVERED WITH ACRYLIC SHROUDS

THERE SHOULD BE MIN 800 SPACE ALL AROUND THE BATTERY STAND FOR MAINTENANCE PURPOSE.

2022		Date	Initial
Dimensions in mm	Designed	18.05.2022	PS
Scale N.T.S	Checked	18.05.2022	VBV
	Approved	18.05.2022	JP
Description : GENERAL ARRANGEMENT DRAWING 87 CELLS X KPM 45 P			

GAD of 87Cells * KPM 45Ah Batteries



4	PVC TERMINAL COVER	32
3	50 Sq FLEXIBLE COPPER CONNECTOR (350 mm L)	02
2	50 Sq FLEXIBLE COPPER CONNECTOR (350 mm L)	03
1	SOLID INTERCELL CONNECTOR (NI PI)	83
	Description	Qty/Set

REFER DRG No. T022G140-I-0 FOR GENERAL ARRANGEMENT DRG.

2022		Date	Initial
Dimensions in mm	Designed	18.05.2022	PG
Scale N.T.S	Checked	18.05.2022	VBN
	Approved	18.05.2022	GP
Description : CONNECTON DETAILS 87 CELLS X KPM 45 P			

Connection Drawing of 87 Cells * KPM 45Ah Batteries

Technical Details for Switchyard Control System 48V Battery Bank

Item Description

1.2VDC KPH 120P Capacity Vented Ni-Cd High Discharge Type Pocket Plate Cells with Electrolyte, ICC's, Battery and Standard Accessories Specification.
Location: Switchyard 48V Battery Bank

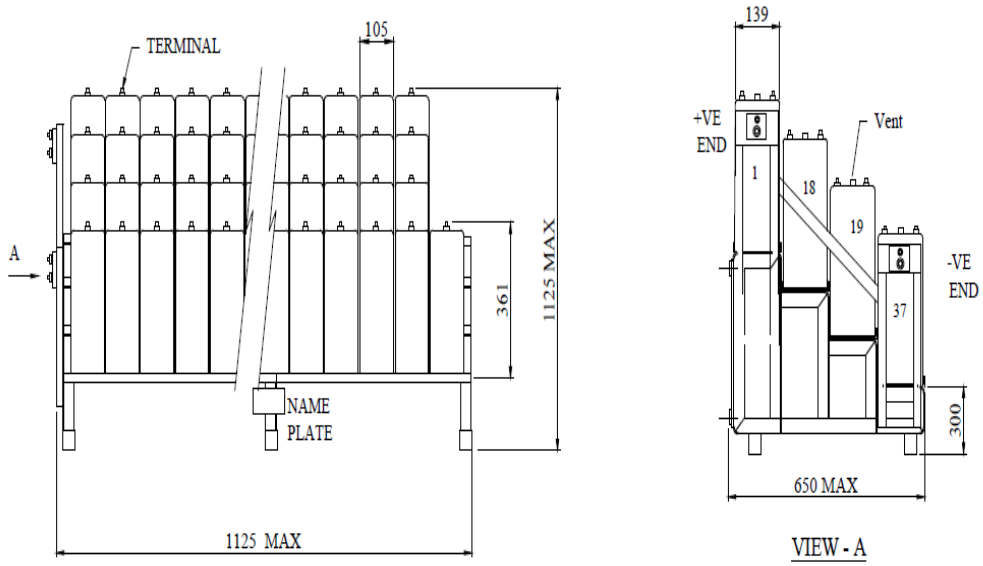
Technical Specification

1. Total Batteries in one Battery Bank: 37Nos
2. Total Number of Battery Bank: 02Nos.
3. Total Batteries installed which requires to be replaced: 74Nos.
4. KPH Series Battery
5. Battery Nominal Voltage: 1.2VDC
6. Battery Capacity (C5): 120Ah
7. Cell Dimensions: Length: 105mm, Breadth: 139mm, Height: 361mm
8. Approx. Cell Weight: 9.5 Kg
9. Electrolyte Volume per cell: 2.1Ltrs
10. Terminal Details: M10
11. With Standard Accessories- Copper Inter Cell Connectors, Copper Pole Connectors and Electrolyte.

Battery type	C_5 Ah	05 Hours	03 Hours	02 Hours	01 Hours	30mins	15mins	10mins	5mins	1min
KPH 120P	120	24	39.4	58.4	113	204	316	373	465	675

Quantity Required

Total Cells to be procured is 90 Nos on Buy Back Policy.
Total Cells in Battery Bank is 74Nos.
Extra 16Nos of Battery to be kept as spare.



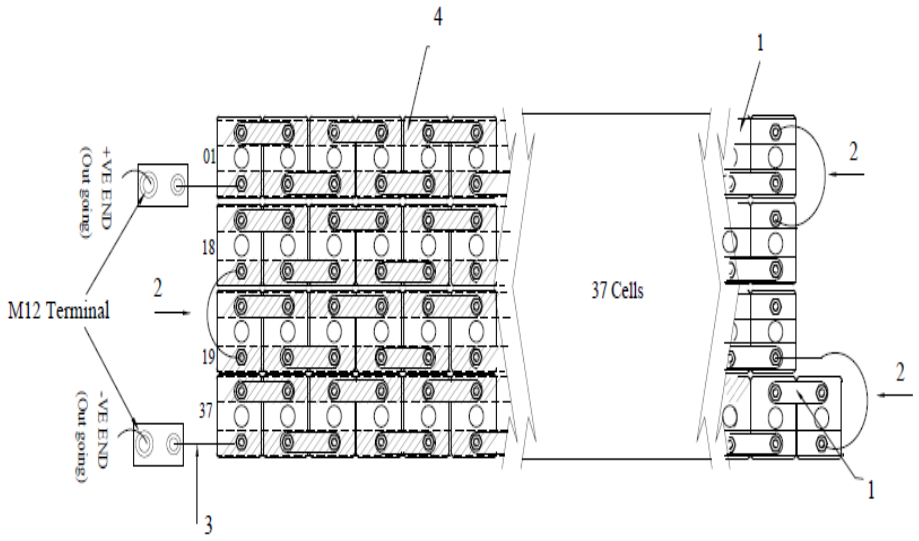
NO OF BATTERY	: 2 SETS
NO. OF CELLS PER BATTERY	: 37 cells
CELL TYPE	: KPH 120 P
CELL LENGTH	: 105
CELL WIDTH	; 139
CELL HEIGHT	: 361
CELL CONTAINER	: POLYPROPYLENE.
NO. OF STANDS	: 1/SET
STAND TYPE	: 4 STEP SINGLE TIER
STAND MATERIAL	: MILD STEEL.
STAND COATING	: POWDER COATED ALKALI RESISTATNT HAVING RAL 7032 SHADE

END TERMINATION WILL BE COVERED WITH ACRYLIC SHROUDS

THERE SHOULD BE MIN 800 SPACE ALL AROUND THE BATTERY STAND FOR MAINTENANCE PURPOSE.

2022		Date	Initial
Dimensions in mm	Designed	18.05.2022	PG
Scale N.T.S	Checked	18.05.2022	VBK
	Approved	18.05.2022	JP
Description : GENERAL ARRANGEMENT DRAWING 37 CELLS X KPH 120 P			

GAD of 37 Cells * KPH 120Ah Batteries (02 Banks)



4	PVC TERMINAL COVER	17
3	50 Sq FLEXIBLE COPPER CONNECTOR (350 mm L)	02
2	50 Sq FLEXIBLE COPPER CONNECTOR (350 mm L)	03
1	SOLID INTERCELL CONNECTOR (NI PI)	33
	Description	Qty/Set

REFER DRG No. T022G141-I-0 FOR GENERAL ARRANGEMENT DRG.

2022		Date	Initial
Dimensions in mm	Designed	18.05.2022	PG
Scale N.T.S	Checked	18.05.2022	YDH
	Approved	18.05.2022	JP
Description :	CONNECTON DETAILS 37 CELLS X KPH 120 P		

Connection Drawing of 37 Cells * KPH 120Ah Batteries (02 Banks)

Technical Details for Switchyard Control System 220V Battery Bank

Item Description

1.2VDC KPH 300P Capacity Vented Ni-Cd High Discharge Type Pocket Plate Cells with Electrolyte, ICC's, Battery and Standard Accessories Specification.
Location: Switchyard 220V Battery Bank

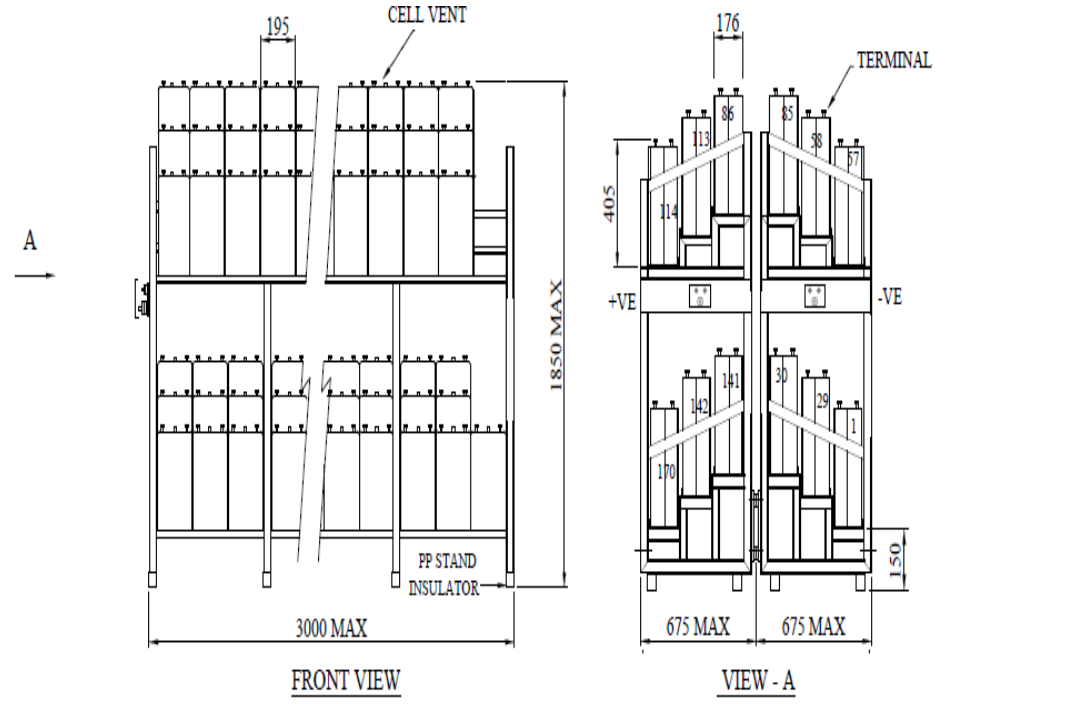
Technical Specification

1. Total Batteries in one Battery Bank: 170Nos
2. Total Number of Battery Bank: 02Nos.
3. Total Batteries installed which requires to be replaced: 340Nos.
4. KPH Series Battery
5. Battery Nominal Voltage: 1.2VDC
6. Battery Capacity (C5): 300Ah
7. Cell Dimensions: Length: 176mm, Breadth: 195mm, Height: 405mm
8. Approx. Cell Weight: 23.6 Kg
9. Electrolyte Volume per cell: 6.2Ltrs
10. Terminal Details: 2XM10
11. With Standard Accessories- Copper Inter Cell Connectors, Copper Pole Connectors and Electrolyte.

Battery type	C_5 Ah	05 Hours	03 Hours	02 Hours	01 Hours	30mins	15mins	10mins	5mins	1min
KPH 300P	300	60	98.5	146	282	511	791	932	1163	1687

Quantity Required

Total Cells to be procured is 370 Nos on Buy Back Policy.
Total Cells in Battery Bank is 340Nos.
Extra 30Nos of Battery to be kept as spare.



NO OF BATTERIES : 2 SETS

NO. OF CELLS PER BATTERY : 170

CELL TYPE : KPH 300 P

CELL LENGTH : 176

CELL WIDTH : 195

CELL HEIGHT ; 405

CELL CONTAINER : POLYPROPYLENE.

NO. OF STANDS : 2/SET

STAND TYPE : 3 STEP 2 TIER

STAND MATERIAL : MILD STEEL.

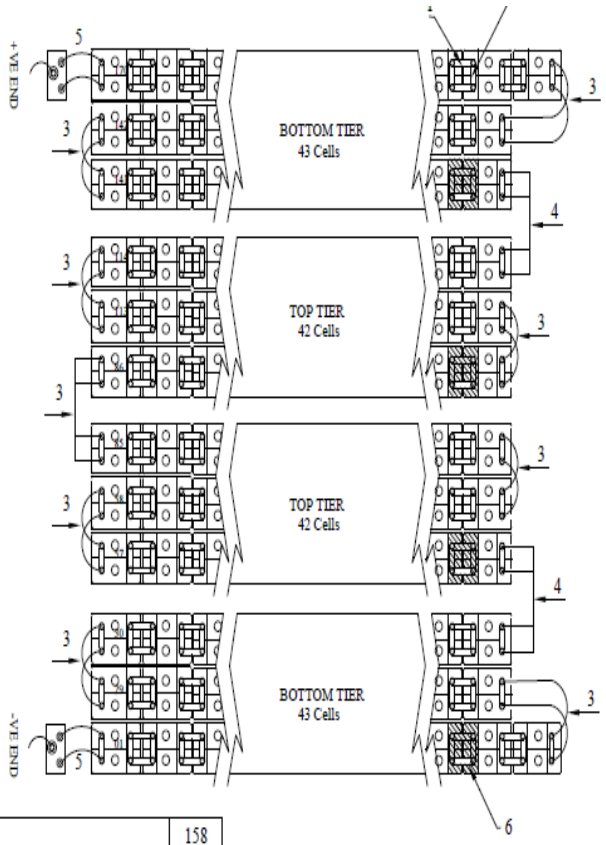
STAND COATING : POWDER COATED ALKALI RESISTANT HAVING RAL 7032 SHADE

END TERMINATION WILL BE COVERED WITH ACRYLIC SHROUDS

THERE SHOULD BE MIN 800 mm SPACE ALL AROUND THE STAND FOR MAINTENANCE PURPOSE.

2022		Date	Initial
Dimensions in mm	Designed	18.05.2022	PG
Scale N.T.S	Checked	18.05.2022	VPM
	Approved	18.05.2022	JP
Description : GENERAL ARRANGEMENT DRAWING 170 CELLS X KPH 300 P			

GAD of 170 Cells * KPH 300Ah Batteries (02 Banks)



6	PVC TERMINAL COVER	158
5	70 Sq FLEXIBLE COPPER CONNECTOR - 750 mm L	04
4	70 Sq FLEXIBLE COPPER CONNECTOR - 1750 mm L	04
3	70 Sq FLEXIBLE COPPER CONNECTOR - 350 mm L	18
2	SOLID COPPER INTERPOLE CONNECTOR (NiPl))	340
1	SOLID COPPER INTERCELL CONNECTOR (NiPl))	316
	Description	Qty/Set

REFER DRG No. T022G-142-I-0 FOR GEN

2022		Date	Initial
Dimensions in mm	Designed	18.05.2022	PG
Scale N.T.S	Checked	18.05.2022	VPM
	Approved	18.05.2022	JP
Description :	CONNECTON DETAILS 170 CELLS X KPH 300 P		

Connection Drawing of 170 Cells * KPH 300Ah Batteries (02 Banks)

1. SCOPE:

The specification covers the design, manufacture, testing at the Manufacturer's works, delivery by road transport to ONGC Tripura Power Company Limited Plant Site at Palatana, Tripura of Ni-Cd Battery Bank suitable for Auto and Manual Float cum Boost Battery Charger with 220VDC, 48VDC and 110VDC Output respectively. Supervision, de-installation of existing battery from each battery bank and erection/commissioning of new battery shall under the scope of vendor. Procurement of batteries of each type will be done on BUY BACK Policy. Also Unloading, transportation of existing batteries at plant bought on Buy Back is in scope of vendor.

2. APPLICATION:

The system requires a reliable and uninterrupted D.C. Power supply to 220VDC STG Emergency drives, 220VDC Switchyard Control Power Supply, 48VDC Switchyard Control Power Supply and 110VDC River Intake PLC System UPS Back Up Systems installed at Plant Site.

3. SERVICE CONDITIONS:

Equipment to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

Maximum ambient temperature (Degree C)	50
Maximum temperature in shade (Degree C)	45
Minimum Temperature (Degree C)	3
Relative Humidity (percent)	95
Maximum Annual rain fall (mm)	1450
Maximum wind pressure (kg/sq. m)	150
Maximum altitude above mean sea level(Meter)	1500
Isoceraunic level (days per year)	50
Seismic Level	The sites fall within seismic zone-III and IV as classified in the IS:1983
Moderately hot and humid tropical climate conductive to rust and fungus growth	

4. STANDARD RATING

The standard voltage ratings of batteries for use at Generating Plant shall be 220 volts, 48Volt and 110Volt respectively. The batteries for the above application shall have a rating of 656 Ah and 300 Ah in case

of 220 V battery systems respectively 120 Ah in case of 48 V battery systems and 45 Ah in case of 110V battery system.

5. CELL VOLTAGE

The nominal voltage of a single cell shall be 1.2 V

Nominal Voltage Rating of Battery Bank	Nominal single cell voltage	Float cell voltage	Boost Cell Voltage	Number of Cells in Battery Bank	End of discharge cell voltage (Min.)
(V)	(V)	(V)	(V)	(Nos.)	(V)
220 (KPH type)	1.2	1.40-1.42	1.45-1.70	170	1.1
110 (KPM type)	1.2	1.40-1.42	1.46-1.70	87	1.1
48 (KPH type)	1.2	1.40-1.42	1.45-1.70	74	1.1
220 (KPH type)	1.2	1.40-1.42	1.45-1.70	340	1.1

6. BATTERY SIZING

The Capacity the Battery should be of:

a. 656 Ah (KPH Type)
b. 45 Ah (KPM Type)
c. 120 Ah (KPH Type)
d. 300 Ah (KPH Type)

7. Installation & Commissioning

On receipt of all batteries of different rating as specified at site, Vendor must depute engineer for de-installation of existing batteries from existing bank, installation and commissioning of new batteries at specified banks. Vendor must perform Charging-Discharging Cycle of each newly commissioned battery bank till rated parameters are achieved at site. Unloading and dispatch of old batteries is also under the scope of selected vendor. Apart from the batteries vendor must supply consumable items as mentioned below for each battery bank at every separate location. It is to be noted that the existing battery MS-Racks will be utilized for installation of new battery bank.

Sl. No	Item	Quantity	UOM
1	Inter-cell / Inter-row / Inter-step / Inter-tier/ Inter string connectors	As per approved GA during detailed engineering stage	Lot.
2	Cell Electrolyte volume	As per database for one complete battery bank set	Ltrs.
3	Stand Insulators- Spare Extra		10nos per set
3	Plastic Mug	1	No.
4	Funnel - 3"/5"	1	No.
5	Installation & Commissioning & O&M Manual	1	No.
6	Latex Gloves-10"	1	Pair
7	Goggle (Industrial)	1	No.
8	PVC Coated Cell Lifter - M20/M10	2	Nos
9	Petro Jelly	1	Kg
10	Boric Acid Powder	As per database	Lot
11	Safety Chart	1	No.
12	Extra electrolyte Ltrs.	5% extra of total cell qty.	Ltr.

8. Inspection

All tests and inspection shall be made at the place of manufacturer unless otherwise specially agreed upon by the manufacturer and the OTPC. The manufacturer shall provide the OTPC all reasonable facilities, without charge to satisfy him that the material is being supplied in accordance with this specification.

Tests:-
General: The equipment (battery of each type) including all components and accessories shall be subjected to all type of tests including Routine and acceptance tests in accordance with provision contained in relevant standard.

Type Test:-

The Bidder shall have to submit along with their Tender documents, as pre-requisites, the complete Type Test Reports as stipulated in the relevant IS/IEC, carried out within 5 years from the due date of Tender, from CPRI/NABL accredited/Govt. recognized Test House or Laboratory on the offered Item, failing which their offer may not be technically acceptable.

Routine and acceptance Tests:-

Routine &acceptance tests shall have to be carried out in compliance with provision contained in the relevant standard and / or to ascertain satisfactory performance of the offered device at the works of the Manufacturer.

The acceptance tests shall have to be conducted in the presence of authorized representative of the purchaser before effecting delivery.