

REQUEST FOR QUOTATION



BHARAT HEAVY ELECTRICALS LIMITED
Electronics Division
PB No. 2606, Mysore Road Bangalore - 560026
INDIA

RFQ NUMBER:
ANKBOS0002

RFQ DATE :
05.JAN.2017

Due Date
17.JAN.2017
Time: 13:00 HRS

VENUE :
NEW ENGG. BLDG

PURCHASE FILE COPY

(for all correspondence)
Purchase Executive : Ankita Reja
Phone : 26989637
Fax :
E-mail: ankitareja@bheledn.co.in

BIDS SHALL BE SUBMITTED THROUGH E-PROCUREMENT PORTAL: <https://bheleps.buyjunction.in>

Sl No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	PS0679053832 Supply of 1250kVA PCU As per spec PS-439-1113. Test Certificate	6	NO	6	
2	PS0679053840 Supply of Duct for 1250kVA PCU As per spec PS-439-1113. Test Certificate	6	ST	6	
3	PS0679054090 I&C of 1250kVA PCU As per spec PS-439-1113	6	AU	6	
4	PS0679054103 I&C of duct for 1250kVA PCU As per spec PS-439-1113	6	AU	6	
5	PS0679054111 Spares for 1250kVA PCU As per spec PS-439-1113. Test Certificate	1	ST	1	
6	PS0679064222 Supply of 1250kVA PCU As per PS-439-1112 Test Certificate	8	NO	8	
7	PS0679064230 Supply of Duct for 1250kVA PCU As per spec PS-439-1112. Test Certificate	8	ST	8	
8	PS0679064249 I&C of 1250kVA PCU As per spec PS-439-1112.	8	AU	8	
9	PS0679064257 I&C of duct for 1250kVA PCU As per spec PS-439-1112.	8	AU	8	
10	PS0679064265 Spares for 1250kVA PCU As per spec PS-439-1112. Test Certificate	1	ST	1	

Total Number of Items - 10

Please note that the tender will be opened in the presence of the bidders or his authorised representatives (maximum two per organisation) who choose to be present with authorisation letters. Refer annexure for the terms and conditions.

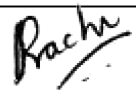
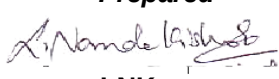
Please specify Terms of delivery, Excise duty, sales tax, Ex-BHEL, Ex-works surcharge, Insurance,P&F, Freight and other taxes very clearly .
For evaluation,exchange rate(TT selling rate of SBI) as on scheduled date of tender opening (Part-I bid incase of two part bid) shall be considered.
The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected.The list of banned firms is available on BHEL web site www.bhel.com

For and On behalf of BHEL.

REQUEST FOR QUOTATION

 MMI:PU:RF:003	BHARAT HEAVY ELECTRICALS LIMITED Electronics Division PB No. 2606, Mysore Road Bangalore - 560026 INDIA	RFQ NUMBER: ANKBOS0002 RFQ DATE : 05.JAN.2017	Due Date 17.JAN.2017 Time: 13:00 HRS VENUE : NEW ENGG. BLDG
PURCHASE FILE COPY		(for all correspondence) Purchase Executive : Ankita Reja Phone : 26989637 Fax : E-mail: ankitareja@bheledn.co.in	
i). This is only RFQ not an order. ii). In all correspondence quote RFQ No. & due date. iii). In Quotation BHEL material code / RFQ Sl. No. should be mentioned clearly. iv). Quotation should remain valid for a minimum period of 90 days from due date. v). In case of non-receipt of Quotation or regret letter for 3 consecutive RFQs you are liable to be removed from our vendors list. vi). All Prices should be written in words and numbers. vii). Excise Chapter Heading should be mentioned for all items where VAT is applicable .			

For and On behalf of BHEL.

		बी एच ई एल  A4-10	PURCHASE SPECIFICATION FOR 1250kW GRID-CONNECTED P POWER CONDITIONING UNITS		PS 439-1112								
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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.													
							Technical specification for Supply, installation and commissioning of 1250kW 3-phase Grid-connected Power conditioning units						
			REVISION: 00		Approved: Prachi Rao V 								
				Prepared  LNK	Issued SC&PV-Engg	Date 03.01.2017							

A4-11

PURCHASE SPECIFICATION FOR
1250kW GRID-CONNECTED POWER CONDITIONING UNITS

PS 439-1112

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Introduction:

This technical specification provides details of supply of 1250kW 3-phase Grid-connected Power Conditioning Units (PCU). The scope also includes commissioning of the supplied units at the project site for synchronizing the generated AC power with LV side of a transformer that connects to 11KV/ 33kV grid on HV side.

1.0 Scope of supply

SL No	Item Description	Qty
1.1	Supply of 1250kW (minimum), 3-phase, Grid-connected Power Conditioning Unit (PCU). Note: 1 No "PCU" includes Inverter Panel, DC Combiner Panel and AC Combiner Panel	As per BHEL tender
1.2	Supply of: (a) External ducts (to meet the thermal / exhaust / air-flow requirement of the panel) (b) Exhaust fans – if applicable (wall-mounted for fixing on control room wall), starters for fans including cables for wiring, with all associated accessories and hardware required for the complete quantity of PCUs as per Sl. 1.1. Note: Exhaust fans along with all associated accessories/hardware/ cables shall be provided if the same is required to be provided in line with HVAC calculations and heat dissipation requirements as per Cl. 4.10.12. Vendor to decide.	1 Set for each PCU
1.3	Supply of Spares for 1250kW power conditioning units. List of items with quantity is as follows: 1) Control Cards for PCU ** Quantity = 5% of total population of each type of card used in PCU including AC and DC Combiner panels 2) IGBT Stack for PCU ** Quantity = 5% of total population ** If Control cards and IGBT stacks form integrated part of Inverter Module – 5% qty of total population of Inverter Modules can be supplied in lieu of separate items against 1) & 2) above. Vendor to confirm 3) Fuses (all types, AC and DC used) Quantity = 5% of total population of each type of fuse used in PCU including AC and DC Combiner panels 4) Surge Protection Device / MOV Quantity = 2% of total population of each type of SPD used in PCU including AC and DC Combiner panels	1 set

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.			5) All types of circuit breakers (MCB, MCCB, ACB) = 5% of total population of each type of CB used in PCU including AC and DC combiner panels			
			Notes: (a) The above spare quantities are over and above the warranty requirements. (b) "Population" stands for total quantity of the item used in the total scope of supply of PCUs as per Cl. 1.1 (c) Where % qty is a decimal, same shall be rounded off to the next higher whole number. (d) Item-wise quantity and break-up prices shall be provided in the unpriced & priced bid			
		1.4	Commissioning of PCUs along with Training at site. BHEL scope of activities at site for installation and commissioning: (1) Movement and positioning of PCU panels at the earmarked position in the control room. (2) Crimping the incoming (DC side) and outgoing (AC side) cables (BHEL supply) using the cable lugs provided by the vendor. (3) Connecting at the respective termination ends of the panels using the cable glands and fastening hardware (nuts, bolts, washers etc) provided by the vendor. Vendor scope of activities at site for commissioning: (1) All the electrical checks that are required to confirm that solar DC parameters (current, voltage) are available at the DC input side of PCUs. (2) All the pre-commissioning checks such as mechanical checks (physical firmness of internal components), electrical tests etc up to the level of synchronization of the PCU output with the grid. (3) All the mechanical tools such as spanners, crimping tools etc required for above checks at site shall be in the scope of vendor. (4) All the electrical tools such as measuring instruments, meters etc required for above checks at site shall be in the scope of vendor. (5) Guidance and support to BHEL team in case of technical problems associated with AC grid side (synchronization-related, etc) or DC side (Problems related to DC input parameters, Earth-faults in solar array, etc). (6) Service engineers shall be present at site during commissioning of power plant, providing all necessary guidance and support to achieve successful synchronization of PCU output with grid and also to trouble-shoot / resolve the technical problems associated with PCU. Commissioning / Service Engineer shall be from OEM. (7) Guidance and support to BHEL team, at the time of installation and commissioning of SCADA, in respect of connection of communication cables to PCUs and technical problems related to receiving data signals at SCADA station from PCUs. (8) Training: Vendor shall provide training at site to BHEL and CUSTOMER engineers during commissioning. Training shall cover various technical aspects such as functional/ operational features, trouble-shooting procedures, maintenance schedules, requirements, safety, emergency precautions etc. Both the theory and practical (hands on) training shall be covered.	1 AU per PCU		

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.			Note: Supply and installation of integrated SCADA system for the overall power plant is within BHEL scope.			
			A single lump-sum price on per-PCU basis shall be offered. The lump-sum price shall include all the costs that will be incurred by the vendor towards commissioning including travel, boarding, lodging and any other contingency expenses.			
		1.5	Installation and commissioning of external ducts - Scope shall include installation of external ducts, exhaust fans (if provided) with starters, with all associated accessory parts, including erection, fixing, mounting, wiring of starters. Interconnection (including supply of cables) from exhaust fans up to ACDB panel shall be in the scope of vendor. All fixing brackets, other support structures, hardware etc required for fixing of the exhaust duct to the roof of the Inverter Room shall be in the PCU vendor's scope. Any drgs for the Inverter Room required for this purpose shall be provided by BHEL to vendor. BHEL will provide the cut-outs on the control room walls for fixing the exhaust fans as per dimensions provided by the vendor. A single lump-sum price on per PCU duct basis shall be offered.			1 AU per PCU duct
		2.0	Warranty Warranty Period shall be as per tender commercial conditions. Vendor shall enclose, along with technical bid, the complete scope, terms and conditions of the warranty.			
3.0 Instructions to vendors on bid submission						
		3.1	Offer shall be submitted in two-parts (Two part-bid).			
		3.2	First-part shall be Technical bid. Following details shall be furnished: 1. Technical offer covering letter. 2. Filled-up enclosures as per BHEL tender formats (meant for first-part technical bid). 3. Clause-wise confirmation to Technical Specifications. 4. Vendor has to enclose the deviation sheet clause wise separately in case any deviations are sought by the vendor. Absence of any deviation sheet shall be taken as compliance of BHEL specification in total without any deviation 5. Product datasheet of the offered PCU model. 6. Overall General Arrangement of PCU including DC and AC Combiner Panels 7. Item-wise list of spares offered as per Cl. 1.3 (with quantity) and without prices shall be included in the unpriced bid. 8. PCU model being offered shall be of type tested variety and shall have all the IEC type test certificates available. IEC Type test certifications as per Cl. 4.1.2 shall be furnished along with offer.			
		3.3	Second-part shall be Price bid with filled up enclosures as per BHEL tender format.			
		3.4	In addition to the above instructions, tender document provides detailed instructions for bid submission. Vendor shall submit the bid based on such tender instructions.			

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				Control in Electrical Power Systems IEC 60068-2 or IEC 62093– Environmental Testing UL 1741 / IEEE 1547 / IEC 62116 or equivalent standard – Protection against islanding of grid IEC 62109-1&2 / IEC 62103 or equivalent standard - Electrical Safety of power converters for use in photovoltaic power systems IEEE 929-2000 CEA Technical Regulation / CERC Regulation and Grid Code - with latest amendments (standards for connectivity to grid) IEC 62910 (version 0126-16:2014-06) - LVRT functionality. In case PCU manufacturer does not have IEC 62910 certification, the same can be conducted at manufacturer's works or at site at no additional cost and without affecting project cycle. Note: All standards, specifications and codes of practice referred to shall be the latest editions including all applicable official amendments and revisions as on date of RFQ. In case of conflict between the specification and those codes/standards (IEC, IS etc), the former shall prevail. Equipments complying with other internationally accepted standards such as BS, UL, DIN, VDE etc will also be considered if they ensure performance and constructional features equivalent or superior to standards listed in this specification. In such case, the bidder shall clearly indicate the standards adopted, furnish a copy in the English of the latest revisions in force as on date of RFQ and shall bring out salient features for comparison.	
4.1.3	Output transformer	PCU shall be of 'transformer-less' design.			
4.1.4	Maximum Power Point Tracking (MPPT)	MPPT shall be integrated in the power conditioning unit to maximize energy drawn from the solar PV array. The MPPT should be microprocessor based to minimize power losses. The details of working mechanism of MPPT shall be submitted during the detailed engineering. The operating voltage range of PCU and the MPPT shall be large enough such that it satisfactorily operates for PV modules exposed to the maximum ambient temperature of 50 deg C.			
4.1.5	AC-DC conversion	3-phase Inverter stack			
4.1.6	Built-in support systems	PCU shall be provided with protection circuits, monitoring circuits, data logging & storage system, provisions to download data to PC/Laptop, communication outputs for SCADA interface etc as per Cl. 4.7 of this specification.			
4.1.7	External ducts and exhaust fans	PCUs shall be provided with external cooling ducts and exhaust fans (if applicable) design of which shall suit the control room layout of BHEL. Details of layout of the control rooms shall be as per Cl. 4.11 of this specification			
4.1.8	DC input and AC output	Input and output terminations together with cable glands, lugs, hardware shall be provided to match the connections using BHEL cables as			

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1250kW GRID-CONNECTED POWER CONDITIONING UNITS

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	terminations	specified under related clauses of this specification. Terminals should be shrouded.
4.1.9	Environment protection	All PCB cards shall be provided with suitable coating (epoxy etc) for protection.

4.2

Technical parameters

#	Technical parameter	BHEL specification
4.2.1	Output power rating	1250 kW minimum (at 50 deg C ambient) without any derating upto 50 deg C
4.2.2	AC grid connection	3-phase
4.2.3	Output frequency	50 Hz +/- 5%
4.2.4	Nominal output voltage	Value to be indicated by vendor
4.2.5	Maximum DC input voltage (Max open circuit PV voltage)	1000 V DC
4.2.6	MPPT Range of control system	Range to be indicated by vendor.
4.2.7	DC side peak power	Min. 1375 KW. Value to be indicated by vendor
4.2.8	Max DC operating current	Value to be indicated by vendor.
4.2.9	Max AC output current	Value to be indicated by vendor corresponding to the rated output power of the PCU.
4.2.10	Power factor & Efficiency	Efficiency: Min 98% P.F: Designed operation close to unity PF. Adjustable window 0.9 lead to 0.9 lag
4.2.11	Ambient temperature	0 to 50 deg C
4.2.12	Relative Humidity	Upto 95% non-condensing
4.2.13	Enclosure	Min. IP 21
4.2.14	Grid Frequency tolerance	+/- 3 Hz
4.2.15	Grid Voltage tolerance	- 10% and + 10%
4.2.17	AC output THD limits	Less than 3% at rated power
4.2.18	Maximum noise level	Value to be indicated by vendor
4.2.19	DC injection (as % of nominal load current)	Value to be indicated by vendor
4.2.20	Flicker	Shall be as per IEC 61000

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.	4.2.21	Reactive Power Compensation	Manual Mode: PCU shall be provided with all necessary features that will enable VAR compensation by manual set point selection through SCADA. For this, PCU vendor shall furnish the Modbus mapping for the set points or suggest the possible method for selecting VAR control. Operator shall be able to limit the total power (Active and Reactive) injected in the grid through manual intervention as and when required in view of grid security. Automatic Mode: In addition to the manual mode of VAR compensation, preferably, the PCU shall also have the feature of automatic VAR compensation. MVAR flow from each PCU shall be dynamically adjusted by the PCU depending on production of solar power upto the rated capacity of PCU and taking feedback of grid parameters.		
	4.2.22	Auxiliary power requirement for PCU Controls / Cubicle Fans / Wall Mounted Exhaust Fans (if applicable)	a) Vendor shall confirm (Yes or No) if any external auxiliary power supply such as 230VAC, 1Ph etc) is required for PCU controls. If required, rating shall be indicated per PCU basis. b) If external aux power is required for PCU as per point 4.2.22 (a), the same shall be provided by BHEL through UPS. c) UPS shall be fed from ACDB panel located in the control room. Vendor to indicate the feeder rating required per PCU. d) Interconnection scope (including supply of cables, cable accessories, hardware etc) from ACDB Panel to UPS/battery to PCU shall be in the scope of BHEL. f) 415VAC, 3-Ph for PCU Cubicle Fans, if required, shall be in vendor's scope and shall be generated within the PCU.		
	4.2.23	Re-synchronization time	In case of grid failure, the PCU shall be re-synchronized with grid after revival of power supply. Vendor shall indicate the time taken by PCU to be re-synchronized after restoration of grid supply.		
	4.3 Protection systems				
	4.3.1	Protection systems for current, voltage, temperature, surges, ground faults, fan failure etc.	AC & DC over current / over voltage		
	4.3.2		AC & DC short circuit		
	4.3.4		Over temperature protection: Heat sink, Cabinet		
	4.3.5		Synchronization loss		
	4.3.6		Anti islanding protection & LVRT		
	4.3.7		EMI and RFI		
	4.3.8		Grid monitoring. Protection against any sustained fault (lightning effect etc) in grid / feeder line.		
	4.3.9		Ground fault protection		
	4.3.10		Insulation monitoring of the PV array with sequential fault location		

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4.3.13				
4.4 DC, AC side load break disconnecting switch / breaker provisions				
4.4.1	DC side	AC side		
4.4.2				

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.				terminal - both positive and negative. Fuse selection shall be done based on the DC input current rating as per Cl. 4.8.1 and considering the safety factor required	
		4.8.3	Max DC input current rating of PCU	Vendor shall indicate the rating. In addition, max rating of each individual DC input shall be indicated	
		4.8.4	DC cable entry into panel	Bottom entry. Cable gland plate for PCU shall be made suitable for the above and drawing for the same shall be made available by vendor during detailed engg. Cable supply is within BHEL scope. 1Cx300 sq-mm Aluminium, multi-strand, armoured, XLPE insulation, PVC sheath cable will be used for positive and negative DC input. DC termination shall be suitable for the above cable.	
		4.8.5	Gland plates	Drilled Gland plates shall be provided with holes to accommodate the cable glands. Spacing between holes shall be chosen to ensure that glands do not touch each other, duly taking into account the clearance required for placing the spanners used to tighten the glands.	
		4.8.6	Cable glands	Nickel plated brass, double compression type cable glands of reputed make (Make: Comet or any other reputed make) shall be provided by the vendor. To enable right selection of glands, final cable O.D will be provided by BHEL at the time of manufacturing. Approval of make and type shall be taken from BHEL before procurement of glands. Part no. and qty shall be indicated in the BOM. PCUs shall be supplied with all the glands fixed on the gland plates.	
		4.8.7	Cable lugs, plain washers, spring washers, bolts and nuts	Similarly, suitable cable lugs (Cu-Al bi-metallic type if busbar is of copper), bolts, nuts & plain washers, Zinc coated spring washers shall be provided by the vendor. Make for lugs: Dowells / Chetna / Billets Electro Werke (3D) or any other reputed make with CE/VDE/UL/CSA/BIS). Approval of make and type shall be taken from BHEL before procurement of glands. Part no. and qty shall be indicated in the BOM. PCUs shall be supplied with all these items fixed on the bus bars at their respective positions.	
		4.8.8	Bus bar design	Busbars can be tinned copper or aluminium as per design. Vendor to furnish details.	

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				Front side portion of the panel shall be used for bottom entry of cable. This is because the rear side portion of the panel will be seated on the floor with front portion open to cable trench below. Also refer Cl. 4.9.2 for additional holes for cables for Auxiliary transformer.	
		4.9.4	Cable glands	Nickel plated brass, double compression type cable glands of reputed make (Make: Comet or any other reputed make) shall be provided by the vendor. Approval of make and type shall be taken from BHEL before procurement of glands. PCUs shall be supplied with all glands fixed on the gland plates.	
4.9.5	Cable lugs, plain washers, spring washers, bolts and nuts	Similarly, suitable cable lugs (Cu-Al bi-metallic type if busbar is of copper), bolts, nuts & plain washers, Zinc coated spring washers shall be provided by the vendor. Make for lugs: Dowells / Chetna / Billets Electro Werke (3D) or any other reputed make with CE/VDE/UL/CSA/BIS). Approval of make and type shall be taken from BHEL before procurement of these items. Part no. and qty shall be indicated in the BOM. PCUs shall be supplied with all these items fixed on the bus bars at their respective positions.			
4.9.6	Bus bar design	Busbars can be tinned copper or aluminium as per design. Vendor to furnish details. Width and length of the bus bars shall be so chosen as (1) to provide full electrical contact to the cable lugs, (2) to ensure that lugs and cables do not touch each other and (3) to prove adequate access to the tightening tools (spanners, etc). Bus bars shall be positioned in such a way that cable shall enter the panel vertically upwards from cable trench below, without any bends or turns after entering the panel. Also refer Cl. 4.9.2 for additional holes for cables for Auxiliary transformer.			
4.9.7	In case of separate AC termination panel	In case the AC output terminations are not within the main PCU panel with the vendor design featuring a separate panel, the add-on panel shall also be included in the offer. General arrangement showing views and details of termination panel, with cable entry particulars, shall be submitted as part of technical bid. Interconnecting the add-on AC termination panel with the main panel, including supply of cables for this purpose, shall be within the scope of vendor.			

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4.10 Panel related parameters				
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	4.10.2	Bus bars	Tinned copper/Al with appropriate size to match current rating, based on vertical / horizontal layouts and bus bar orientations. Insulation sleeves (PVC etc) shall be used wherever necessary. Bus bars (both AC and DC) shall be suitably colour coded.	
	4.10.3	Internal power cables	Insulated (PVC etc) copper cable with appropriate cross section to match current rating.	
	4.10.4	Control wiring	Insulated (PVC etc) copper cable of appropriate cross-section.	
	4.10.5	Base channel	ISMC channel of appropriate size to withstand the weight of the panel; suitable anti-corrosive finish (powder coated finish etc). Single rectangular ISMC base frame shall be provided for the complete panel.	
	4.10.6	Provisions for grouting	Base channel shall have suitable provisions (holes, etc) for grouting the panel on floor.	
	4.10.7	Earthing terminals as per relevant standards	Earthing terminals shall be provided using tinned copper / aluminium bars of suitable cross section. Terminals shall be brought out to facilitate external connections.	
	4.10.8	Insulation clearances	AC side: Phase to Phase / neutral: 25 mm min. DC side: As per relevant standards.	
	4.10.9	Painting	Epoxy based powder coating. Paint thickness: 50 microns (minimum). Colour: Front and Rear Doors (Internal and External): As per customer approved drgs End Covers (Internal and External): As per customer approved drgs Powder coating shall meet the requirement of IS 13871.	
	4.10.10	Overall dimensions	Width x Depth x Height in mm shall be indicated in the offer.	
	4.10.11	Weight	Panel weight shall be indicated in the offer.	
	4.10.12	Air Flow Requirement (m3/hr)	To be indicated by vendor for each PCU. - HVAC calculations shall be provided by vendor during detailed engg - Vendor shall suggest the type, qty and placement of ventilation fans in the inverter control rooms to meet the required air flow. For this purpose, BHEL shall provide the final room layout drg during detailed engg - Tentative room layout is enclosed. Based on the same, vendor to decide if additional exhaust fan is required to be mounted (affixed to	

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.			4. Dimensional check on enclosure 5. Degree of Protection Test 6. Complete Bill of materials check 7. HV / IR insulation tests on main and control circuits 8. Burn-in tests 9. Factory acceptance tests (a) Load testing of inverter: - Verification of inverter performance in its stand alone operational mode with a defined power (up to 100% rated full load power) and DC input voltage (up to max value). All parameters: DC voltage, current, power, grid voltage / current of R,Y,B lines, line frequency, ac output power, ac output energy, power factor, line current, efficiency, THD, etc. to be measured at 25%, 50%, 75% and 100% of the rated nominal power and checked against specified acceptance norms. - Synchronization to grid - Verification of responses of heat sink and cabinet cooling fans to heat sink and cabinet temperature rises. - Verification of inverter tripping response to simulated electrical shorts on ac output side. - Heat Run Test at rated full load on 1 no. panel (b) Automatic mode testing (wake up and shut down) with simulated / actual grid and dc input supplies. - Verification of automatic waking up of inverter as the dc input supply picks up and rises beyond set point levels. - Verification of export of power to the grid in relation to functioning of MPPT. This functional test shall include demonstration of change in MPPT output with change in input DC voltage. - Verification of automatic shutdown of inverter as dc input supply falls below set point levels (c) Protection tests (by direct method or simulation method) - Verification of automatic disconnecting and reconnecting of - Inverter to the grid, based on rise and fall of heat sink and cabinet temperature with reference to set points. - Loss of Air Flow / rise of temperature alarm indication due to cooling fan failure - Verification of inverter tripping response to simulated failure of cooling fans. - Anti-Islanding Protection test - DC Ground Fault - AC and DC Overvoltage - Abnormal voltage and frequency - Insulation monitoring of each DC input of PV array with sequential fault location	



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- LVRT check (either at factory or site)

(d) Functional tests

- System response to various set points for controls and protections
- Emergency shutdown cases
- Disconnect switch, breaker and contactor operations
- Meters and displays
- Data downloading from PCU

Test reports shall be submitted prior to dispatch of the system to the site.

5.2	Type Tests:
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(a) PCU model and rating being offered shall be an IEC type tested model in compliance with all IEC tests as per Cl. 4.1.2 (codes / standards)

(b) Valid IEC Certifications shall be furnished along with technical bid.

6.0 Service during warranty period

6.1	During the warranty period, whenever a technical problem is encountered with the PCU, BHEL will report the same to the vendor.
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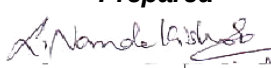
Vendor shall ensure that the problem is attended to by their service engineer within two days from the date of reporting.

7.0 Documents to be submitted after receipt of purchase order

7.1	Following documents shall be submitted for approval within seven days from date of purchase order.
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1. GTP/Datasheet
2. General Arrangement of PCU with LT output Switchgear (either integrated in PCU or in separate panel) (with overall dimensions, plan, elevation, side views, bill of materials of major functional components viz. Inverter stack, IGBTs, heat sinks, cooling fans, air filters, capacitors, inductors, power supplies, sensors, protection cards, fuses, MCBs, ACBs, Surge protection devices, isolator switches, breakers, contactors, displays, push buttons, data loggers, communication devices, ports etc, make / part number / rating / quantity of these components.
3. Panel details of doors, frames, gland plates, bus bars, cables, earth terminals, base channel, paint finish, IP class, applicable standards.
4. General arrangement of front panel with displays, push buttons, lamp indicators, etc.
5. General arrangement showing DC input termination details viz. bus bars with details of holes for cable connections, bus bar supports, fuses, etc.
6. General arrangement showing AC output termination details viz. bus bars with details of holes for cable connection, bus bar supports, etc
7. BOM for complete PCU including all major components of PCU, AC and DC Combiner Panels
8. Mandatory Spares List

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		Technical specification for Supply, installation and commissioning of 1250kW 3-phase Grid-connected Power conditioning units				
		REVISION: 00	Approved: Prachi Rao V 			
			Prepared  LNK	Issued SC&PV-Engg	Date 03.01.2017	

A4-11

PURCHASE SPECIFICATION FOR
1250kW GRID-CONNECTED POWER CONDITIONING UNITS

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Introduction:

This technical specification provides details of supply of 1250kW 3-phase Grid-connected Power Conditioning Units (PCU). The scope also includes commissioning of the supplied units at the project site for synchronizing the generated AC power with LV side of a transformer that connects to 11KV/ 33kV grid on HV side.

1.0 Scope of supply

SL No	Item Description	Qty
1.1	Supply of 1250kW (minimum), 3-phase, Grid-connected Power Conditioning Unit (PCU). Note: 1 No "PCU" includes Inverter Panel, DC Combiner Panel and AC Combiner Panel	As per BHEL tender
1.2	Supply of: (a) External ducts (to meet the thermal / exhaust / air-flow requirement of the panel) (b) Exhaust fans – if applicable (wall-mounted for fixing on control room wall), starters for fans including cables for wiring, with all associated accessories and hardware required for the complete quantity of PCUs as per Sl. 1.1. Note: Exhaust fans along with all associated accessories/hardware/ cables shall be provided if the same is required to be provided in line with HVAC calculations and heat dissipation requirements as per Cl. 4.10.12. Vendor to decide.	1 Set for each PCU
1.3	Supply of Spares for 1250kW power conditioning units. List of items with quantity is as follows: 1) Control Cards for PCU ** Quantity = 5% of total population of each type of card used in PCU including AC and DC Combiner panels 2) IGBT Stack for PCU ** Quantity = 5% of total population ** If Control cards and IGBT stacks form integrated part of Inverter Module – 5% qty of total population of Inverter Modules can be supplied in lieu of separate items against 1) & 2) above. Vendor to confirm 3) Fuses (all types, AC and DC used) Quantity = 5% of total population of each type of fuse used in PCU including AC and DC Combiner panels 4) Surge Protection Device / MOV Quantity = 2% of total population of each type of SPD used in PCU including AC and DC Combiner panels	1 set

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.			5) All types of circuit breakers (MCB, MCCB, ACB) = 5% of total population of each type of CB used in PCU including AC and DC combiner panels Notes: (a) The above spare quantities are over and above the warranty requirements. (b) "Population" stands for total quantity of the item used in the total scope of supply of PCUs as per Cl. 1.1 (c) Where % qty is a decimal, same shall be rounded off to the next higher whole number. (d) Item-wise quantity and break-up prices shall be provided in the unpriced & priced bid			
		1.4	Commissioning of PCUs along with Training at site. BHEL scope of activities at site for installation and commissioning: (1) Movement and positioning of PCU panels at the earmarked position in the control room. (2) Crimping the incoming (DC side) and outgoing (AC side) cables (BHEL supply) using the cable lugs provided by the vendor. (3) Connecting at the respective termination ends of the panels using the cable glands and fastening hardware (nuts, bolts, washers etc) provided by the vendor. Vendor scope of activities at site for commissioning: (1) All the electrical checks that are required to confirm that solar DC parameters (current, voltage) are available at the DC input side of PCUs. (2) All the pre-commissioning checks such as mechanical checks (physical firmness of internal components), electrical tests etc up to the level of synchronization of the PCU output with the grid. (3) All the mechanical tools such as spanners, crimping tools etc required for above checks at site shall be in the scope of vendor. (4) All the electrical tools such as measuring instruments, meters etc required for above checks at site shall be in the scope of vendor. (5) Guidance and support to BHEL team in case of technical problems associated with AC grid side (synchronization-related, etc) or DC side (Problems related to DC input parameters, Earth-faults in solar array, etc). (6) Service engineers shall be present at site during commissioning of power plant, providing all necessary guidance and support to achieve successful synchronization of PCU output with grid and also to trouble-shoot / resolve the technical problems associated with PCU. Commissioning / Service Engineer shall be from OEM. (7) Guidance and support to BHEL team, at the time of installation and commissioning of SCADA, in respect of connection of communication cables to PCUs and technical problems related to receiving data signals at SCADA station from PCUs. (8) Training: Vendor shall provide training at site to BHEL and CUSTOMER engineers during commissioning. Training shall cover various technical aspects such as functional/ operational features, trouble-shooting procedures, maintenance schedules, requirements, safety, emergency precautions etc. Both the theory and practical (hands on) training shall be covered.	1 AU per PCU		

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बीएच ई एल BHEL A4-11	PURCHASE SPECIFICATION FOR 1250kW GRID-CONNECTED POWER CONDITIONING UNITS		PS 439-1113
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		Note: Supply and installation of integrated SCADA system for the overall power plant is within BHEL scope.	
		A single lump-sum price on per-PCU basis shall be offered. The lump-sum price shall include all the costs that will be incurred by the vendor towards commissioning including travel, boarding, lodging and any other contingency expenses.	
1.5	Installation and commissioning of external ducts - Scope shall include installation of external ducts, exhaust fans (if provided) with starters, with all associated accessory parts, including erection, fixing, mounting, wiring of starters. Interconnection (including supply of cables) from exhaust fans up to ACDB panel shall be in the scope of vendor. All fixing brackets, other support structures, hardware etc required for fixing of the exhaust duct to the roof of the Inverter Room shall be in the PCU vendor's scope. Any drgs for the Inverter Room required for this purpose shall be provided by BHEL to vendor. BHEL will provide the cut-outs on the control room walls for fixing the exhaust fans as per dimensions provided by the vendor. A single lump-sum price on per PCU duct basis shall be offered.	1 AU per PCU duct	
2.0	Warranty Warranty Period shall be as per tender commercial conditions. Vendor shall enclose, along with technical bid, the complete scope, terms and conditions of the warranty.		
3.0 Instructions to vendors on bid submission			
3.1	Offer shall be submitted in two-parts (Two part-bid).		
3.2	First-part shall be Technical bid. Following details shall be furnished: 1. Technical offer covering letter. 2. Filled-up enclosures as per BHEL tender formats (meant for first-part technical bid). 3. Clause-wise confirmation to Technical Specifications. 4. Vendor has to enclose the deviation sheet clause wise separately in case any deviations are sought by the vendor. Absence of any deviation sheet shall be taken as compliance of BHEL specification in total without any deviation 5. Product datasheet of the offered PCU model. 6. Overall General Arrangement of PCU including DC and AC Combiner Panels 7. Item-wise list of spares offered as per Cl. 1.3 (with quantity) and without prices shall be included in the unpriced bid. 8. PCU model being offered shall be of type tested variety and shall have all the IEC type test certificates available. IEC Type test certifications as per Cl. 4.1.2 shall be furnished along with offer.		
3.3	Second-part shall be Price bid with filled up enclosures as per BHEL tender format.		
3.4	In addition to the above instructions, tender document provides detailed instructions for bid submission. Vendor shall submit the bid based on such tender instructions.		

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				Control in Electrical Power Systems IEC 60068-2 or IEC 62093– Environmental Testing UL 1741 / IEEE 1547 / IEC 62116 or equivalent standard – Protection against islanding of grid IEC 62109-1&2 / IEC 62103 or equivalent standard - Electrical Safety of power converters for use in photovoltaic power systems IEEE 929-2000 CEA Technical Regulation / CERC Regulation and Grid Code - with latest amendments (standards for connectivity to grid) IEC 62910 (version 0126-16:2014-06) - LVRT functionality. In case PCU manufacturer does not have IEC 62910 certification, the same can be conducted at manufacturer's works or at site at no additional cost and without affecting project cycle. Note: All standards, specifications and codes of practice referred to shall be the latest editions including all applicable official amendments and revisions as on date of RFQ. In case of conflict between the specification and those codes/standards (IEC, IS etc), the former shall prevail. Equipments complying with other internationally accepted standards such as BS, UL, DIN, VDE etc will also be considered if they ensure performance and constructional features equivalent or superior to standards listed in this specification. In such case, the bidder shall clearly indicate the standards adopted, furnish a copy in the English of the latest revisions in force as on date of RFQ and shall bring out salient features for comparison.	
4.1.3	Output transformer	PCU shall be of 'transformer-less' design.			
4.1.4	Maximum Power Point Tracking (MPPT)	MPPT shall be integrated in the power conditioning unit to maximize energy drawn from the solar PV array. The MPPT should be microprocessor based to minimize power losses. The details of working mechanism of MPPT shall be submitted during the detailed engineering. The operating voltage range of PCU and the MPPT shall be large enough such that it satisfactorily operates for PV modules exposed to the maximum ambient temperature of 50 deg C.			
4.1.5	AC-DC conversion	3-phase Inverter stack			
4.1.6	Built-in support systems	PCU shall be provided with protection circuits, monitoring circuits, data logging & storage system, provisions to download data to PC/Laptop, communication outputs for SCADA interface etc as per Cl. 4.7 of this specification.			
4.1.7	External ducts and exhaust fans	PCUs shall be provided with external cooling ducts and exhaust fans (if applicable) design of which shall suit the control room layout of BHEL. Details of layout of the control rooms shall be as per Cl. 4.11 of this specification			
4.1.8	DC input and AC output	Input and output terminations together with cable glands, lugs, hardware shall be provided to match the connections using BHEL cables as			

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	terminations	specified under related clauses of this specification. Terminals should be shrouded.	
4.1.9	Environment protection	All PCB cards shall be provided with suitable coating (epoxy etc) for protection.	
4.2 Technical parameters			
#	Technical parameter	BHEL specification	
4.2.1	Output power rating	1250 kW minimum (at 50 deg C ambient) without any derating upto 50 deg C	
4.2.2	AC grid connection	3-phase	
4.2.3	Output frequency	50 Hz +/- 5%	
4.2.4	Nominal output voltage	Value to be indicated by vendor	
4.2.5	Maximum DC input voltage (Max open circuit PV voltage)	1000 V DC	
4.2.6	MPPT Range of control system	Range to be indicated by vendor.	
4.2.7	DC side peak power	Min. 1375 KW. Value to be indicated by vendor	
4.2.8	Max DC operating current	Value to be indicated by vendor.	
4.2.9	Max AC output current	Value to be indicated by vendor corresponding to the rated output power of the PCU.	
4.2.10	Power factor & Efficiency	Efficiency: Min 98% P.F: Designed operation close to unity PF. Adjustable window 0.9 lead to 0.9 lag	
4.2.11	Ambient temperature	0 to 50 deg C	
4.2.12	Relative Humidity	Upto 95% non-condensing	
4.2.13	Enclosure	Min. IP 21	
4.2.14	Grid Frequency tolerance	+/- 3 Hz	
4.2.15	Grid Voltage tolerance	- 10% and + 10%	
4.2.17	AC output THD limits	Less than 3% at rated power	
4.2.18	Maximum noise level	Value to be indicated by vendor	
4.2.19	DC injection (as % of nominal load current)	Value to be indicated by vendor	
4.2.20	Flicker	Shall be as per IEC 61000	

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A4-11			4.2.21	Reactive Power Compensation	Manual Mode: PCU shall be provided with all necessary features that will enable VAR compensation by manual set point selection through SCADA. For this, PCU vendor shall furnish the Modbus mapping for the set points or suggest the possible method for selecting VAR control. Operator shall be able to limit the total power (Active and Reactive) injected in the grid through manual intervention as and when required in view of grid security. Automatic Mode: In addition to the manual mode of VAR compensation, preferably, the PCU shall also have the feature of automatic VAR compensation. MVAR flow from each PCU shall be dynamically adjusted by the PCU depending on production of solar power upto the rated capacity of PCU and taking feedback of grid parameters.
4.2.22	Auxiliary power requirement for PCU Controls / Cubicle Fans / Wall Mounted Exhaust Fans (if applicable)		a) Vendor shall confirm (Yes or No) if any external auxiliary power supply such as 230VAC, 1Ph etc) is required for PCU controls. If required, rating shall be indicated per PCU basis. b) If external aux power is required for PCU as per point 4.2.22 (a), the same shall be provided by BHEL through UPS. c) UPS shall be fed from ACDB panel located in the control room. Vendor to indicate the feeder rating required per PCU. d) Interconnection scope (including supply of cables, cable accessories, hardware etc) from ACDB Panel to UPS/battery to PCU shall be in the scope of BHEL. f) 415VAC, 3-Ph for PCU Cubicle Fans, if required, shall be in vendor's scope and shall be generated within the PCU.		
4.2.23	Re-synchronization time		In case of grid failure, the PCU shall be re-synchronized with grid after revival of power supply. Vendor shall indicate the time taken by PCU to be re-synchronized after restoration of grid supply.		
4.3 Protection systems					
	4.3.1	Protection systems for current, voltage, temperature, surges, ground faults, fan failure etc.	AC & DC over current / over voltage		
	4.3.2		AC & DC short circuit		
	4.3.4		Over temperature protection: Heat sink, Cabinet		
	4.3.5		Synchronization loss		
	4.3.6		Anti islanding protection & LVRT		
	4.3.7		EMI and RFI		
	4.3.8		Grid monitoring. Protection against any sustained fault (lightning effect etc) in grid / feeder line.		
	4.3.9		Ground fault protection		
	4.3.10		Insulation monitoring of the PV array with sequential fault location		

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.		4.3.11		SPD-based overvoltage protection on both DC and AC sides. SPD shall consist of MOV type arrestors. It shall have thermal disconnectors to interrupt surge current arising from internal / external faults. The discharge capability of SPD shall be at least 10kA at 8/20 microsecond wave as per IEC 61643-12.	
		4.3.12		SPD for auxiliary power supply	
		4.3.13		Fan failure – Alarm contact shall be provided for air flow loss / rise of temperature of cooling fan	
		4.4 DC, AC side load break disconnecting switch / breaker provisions			
4.4.1	DC side	DC Switch Disconnecter to be provided			
4.4.2	AC side	(a) Aux contacts (ON/OFF status) from both ACB and DC Switch Disconnecter shall be made available at TB terminals to enable external wiring for SCADA purpose.			
		(b) Surge protection device (3P) with suitable rating shall be provided at the input of the ACB.			
		(c) Indication for grid side supply ON / OFF status shall be available on the Door Interface.			
		(d) ACBs shall be provided either within the PCU cubicle or in a separate LT Panel depending on the design available with vendor. Vendor shall indicate the methodology followed.			
		(e) Interconnection between the ACB Panel and PCU supply/provision of cables / busbars as applicable shall be in the scope of the vendor.			
		Make and part no. of ACB being used shall be indicated in offer			
4.5 Front panel display and control					
4.5.1	Front panel screen (LCD display, etc) with browsing / navigation provisions to 1) select display parameters 2) provide settings for various parameters	DC side voltage, current, power			
4.5.2		AC side output voltage (all three lines), current (all three lines), frequency, phase, power factor, power, export energy etc			
4.5.3		Grid side voltage, frequency, phase, etc			
4.5.4		Temperatures (ambient, heat sink, cabinet, fans etc)			
4.5.5		Faults			
4.5.6		Other event logs			
4.5.7		Other features as may be necessary for supervisory control and operation of the PCUs shall be provided.			

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.				terminal - both positive and negative. Fuse selection shall be done based on the DC input current rating as per Cl. 4.8.1 and considering the safety factor required	
		4.8.3	Max DC input current rating of PCU	Vendor shall indicate the rating. In addition, max rating of each individual DC input shall be indicated	
		4.8.4	DC cable entry into panel	Bottom entry. Cable gland plate for PCU shall be made suitable for the above and drawing for the same shall be made available by vendor during detailed engg. Cable supply is within BHEL scope. 1Cx300 sq-mm Aluminium, multi-strand, armoured, XLPE insulation, PVC sheath cable will be used for positive and negative DC input. DC termination shall be suitable for the above cable.	
		4.8.5	Gland plates	Drilled Gland plates shall be provided with holes to accommodate the cable glands. Spacing between holes shall be chosen to ensure that glands do not touch each other, duly taking into account the clearance required for placing the spanners used to tighten the glands.	
		4.8.6	Cable glands	Nickel plated brass, double compression type cable glands of reputed make (Make: Comet or any other reputed make) shall be provided by the vendor. To enable right selection of glands, final cable O.D will be provided by BHEL at the time of manufacturing. Approval of make and type shall be taken from BHEL before procurement of glands. Part no. and qty shall be indicated in the BOM. PCUs shall be supplied with all the glands fixed on the gland plates.	
		4.8.7	Cable lugs, plain washers, spring washers, bolts and nuts	Similarly, suitable cable lugs (Cu-Al bi-metallic type if busbar is of copper), bolts, nuts & plain washers, Zinc coated spring washers shall be provided by the vendor. Make for lugs: Dowells / Chetna / Billets Electro Werke (3D) or any other reputed make with CE/VDE/UL/CSA/BIS). Approval of make and type shall be taken from BHEL before procurement of glands. Part no. and qty shall be indicated in the BOM. PCUs shall be supplied with all these items fixed on the bus bars at their respective positions.	
		4.8.8	Bus bar design	Busbars can be tinned copper or aluminium as per design. Vendor to furnish details.	

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.		A4-11		Width and length of the bus bars shall be so chosen as (1) to provide full electrical contact to the cable lugs, (2) to ensure that lugs and cables do not touch each other and (3) to provide adequate access to the tightening tools (spanners, etc). Bus bars shall be positioned in such a way that the cables enter the panel vertically upwards from the cable trench below, without having to take any bends or turns after entering the panel.
		4.8.9	In case of separate DC termination panel	(a) In case the DC terminations are not within the main PCU panel with the vendor design featuring a separate panel, the add-on panel shall also be included in the offer. (b) General arrangement showing views and details of termination panel, with cable entry particulars, shall be submitted as part of technical bid. (c) Interconnecting the add-on DC termination panel with the main panel, including supply of cables for this purpose, shall be within the scope of vendor.
		4.8.10	PID Monitoring through PCU DC Side Negative Grounding	DC side negative grounding system shall be provided in the PCU. The same is required for monitoring the Potential Induced Degradation (PID) effect of PV Modules, if any, and provision of annunciation/ protection of the PV array system against PID effect. Vendor to note that the PV array is a floating unearthed system. Scheme for DC side negative grounding shall be indicated in the GA/SLD/Schematics and BOM.
		4.9 AC Output and termination details Vendor shall supply the PCU with the termination requirements on AC side as tabulated below. General arrangement showing views of termination shall be submitted as part of technical bid. Detailed drawings of termination arrangements with bus bar particulars such as positions, dimensions, hole sizes, spacing between holes, support to busbar, etc shall be submitted within seven days after receipt of purchase order for BHEL approval.		
		4.9.1	Number of AC outputs	Three phases: R, Y, B terminals
		4.9.2	AC cable entry into panel	Bottom entry (front side). Refer Cl. 4.8.4 for further details regarding cable entry. Cables are in BHEL scope. For each phase, 7 runs of 1Cx300 sq.mm (tentative size), Al conductor, multi-strand, armoured, XLPE insulation, PVC sheath cable will be used. Final cable selected and cable O.D shall be informed to vendor during detailed engineering for selecting suitable cable lugs, glands and termination.
		4.9.3	Gland plates	Drilled Gland plates shall be provided with holes to accommodate the cable glands. Spacing between holes shall be chosen to ensure that glands do not touch each other, duly taking to account the clearance required for placing the spanners used to tighten the glands.

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.				Front side portion of the panel shall be used for bottom entry of cable. This is because the rear side portion of the panel will be seated on the floor with front portion open to cable trench below. Also refer Cl. 4.9.2 for additional holes for cables for Auxiliary transformer.	
		4.9.4	Cable glands	Nickel plated brass, double compression type cable glands of reputed make (Make: Comet or any other reputed make) shall be provided by the vendor. Approval of make and type shall be taken from BHEL before procurement of glands. PCUs shall be supplied with all glands fixed on the gland plates.	
		4.9.5	Cable lugs, plain washers, spring washers, bolts and nuts	Similarly, suitable cable lugs (Cu-Al bi-metallic type if busbar is of copper), bolts, nuts & plain washers, Zinc coated spring washers shall be provided by the vendor. Make for lugs: Dowells / Chetna / Billets Electro Werke (3D) or any other reputed make with CE/VDE/UL/CSA/BIS). Approval of make and type shall be taken from BHEL before procurement of these items. Part no. and qty shall be indicated in the BOM. PCUs shall be supplied with all these items fixed on the bus bars at their respective positions.	
		4.9.6	Bus bar design	Busbars can be tinned copper or aluminium as per design. Vendor to furnish details. Width and length of the bus bars shall be so chosen as (1) to provide full electrical contact to the cable lugs, (2) to ensure that lugs and cables do not touch each other and (3) to prove adequate access to the tightening tools (spanners, etc). Bus bars shall be positioned in such a way that cable shall enter the panel vertically upwards from cable trench below, without any bends or turns after entering the panel. Also refer Cl. 4.9.2 for additional holes for cables for Auxiliary transformer.	
		4.9.7	In case of separate AC termination panel	In case the AC output terminations are not within the main PCU panel with the vendor design featuring a separate panel, the add-on panel shall also be included in the offer. General arrangement showing views and details of termination panel, with cable entry particulars, shall be submitted as part of technical bid. Interconnecting the add-on AC termination panel with the main panel, including supply of cables for this purpose, shall be within the scope of vendor.	



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4.10 Panel related parameters

4.10.1	Structure sheets	Doors and frames - Type of enclosure and size/thickness details of the doors and frames shall be indicated by vendor Gland plate: Minimum 3mm thk min sheet steel or 4 mm thk non-magnetic material
4.10.2	Bus bars	Tinned copper/Al with appropriate size to match current rating, based on vertical / horizontal layouts and bus bar orientations. Insulation sleeves (PVC etc) shall be used wherever necessary. Bus bars (both AC and DC) shall be suitably colour coded.
4.10.3	Internal power cables	Insulated (PVC etc) copper cable with appropriate cross section to match current rating.
4.10.4	Control wiring	Insulated (PVC etc) copper cable of appropriate cross-section.
4.10.5	Base channel	ISMC channel of appropriate size to withstand the weight of the panel; suitable anti-corrosive finish (powder coated finish etc). Single rectangular ISMC base frame shall be provided for the complete panel.
4.10.6	Provisions for grouting	Base channel shall have suitable provisions (holes, etc) for grouting the panel on floor.
4.10.7	Earthing terminals as per relevant standards	Earthing terminals shall be provided using tinned copper / aluminium bars of suitable cross section. Terminals shall be brought out to facilitate external connections.
4.10.8	Insulation clearances	AC side: Phase to Phase / neutral: 25 mm min. DC side: As per relevant standards.
4.10.9	Painting	Epoxy based powder coating. Paint thickness: 50 microns (minimum). Colour: Front and Rear Doors (Internal and External): As per customer approved drgs End Covers (Internal and External): As per customer approved drgs Powder coating shall meet the requirement of IS 13871.
4.10.10	Overall dimensions	Width x Depth x Height in mm shall be indicated in the offer.
4.10.11	Weight	Panel weight shall be indicated in the offer.
4.10.12	Air Flow Requirement (m3/hr)	To be indicated by vendor for each PCU. - HVAC calculations shall be provided by vendor during detailed engg - Vendor shall suggest the type, qty and placement of ventilation fans in the inverter control rooms to meet the required air flow. For this purpose, BHEL shall provide the final room layout drg during detailed engg - Tentative room layout is enclosed. Based on the same, vendor to decide if additional exhaust fan is required to be mounted (affixed to

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.			4. Dimensional check on enclosure 5. Degree of Protection Test 6. Complete Bill of materials check 7. HV / IR insulation tests on main and control circuits 8. Burn-in tests 9. Factory acceptance tests (a) Load testing of inverter: - Verification of inverter performance in its stand alone operational mode with a defined power (up to 100% rated full load power) and DC input voltage (up to max value). All parameters: DC voltage, current, power, grid voltage / current of R,Y,B lines, line frequency, ac output power, ac output energy, power factor, line current, efficiency, THD, etc. to be measured at 25%, 50%, 75% and 100% of the rated nominal power and checked against specified acceptance norms. - Synchronization to grid - Verification of responses of heat sink and cabinet cooling fans to heat sink and cabinet temperature rises. - Verification of inverter tripping response to simulated electrical shorts on ac output side. - Heat Run Test at rated full load on 1 no. panel (b) Automatic mode testing (wake up and shut down) with simulated / actual grid and dc input supplies. - Verification of automatic waking up of inverter as the dc input supply picks up and rises beyond set point levels. - Verification of export of power to the grid in relation to functioning of MPPT. This functional test shall include demonstration of change in MPPT output with change in input DC voltage. - Verification of automatic shutdown of inverter as dc input supply falls below set point levels (c) Protection tests (by direct method or simulation method) - Verification of automatic disconnecting and reconnecting of - Inverter to the grid, based on rise and fall of heat sink and cabinet temperature with reference to set points. - Loss of Air Flow / rise of temperature alarm indication due to cooling fan failure - Verification of inverter tripping response to simulated failure of cooling fans. - Anti-Islanding Protection test - DC Ground Fault - AC and DC Overvoltage - Abnormal voltage and frequency - Insulation monitoring of each DC input of PV array with sequential fault location	

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- LVRT check (either at factory or site)
- (d) Functional tests
 - System response to various set points for controls and protections
 - Emergency shutdown cases
 - Disconnecter switch, breaker and contactor operations
 - Meters and displays
 - Data downloading from PCU

Test reports shall be submitted prior to dispatch of the system to the site.

5.2

Type Tests:

(a) PCU model and rating being offered shall be an IEC type tested model in compliance with all IEC tests as per Cl. 4.1.2 (codes / standards)

(b) Valid IEC Certifications shall be furnished along with technical bid.

6.0 Service during warranty period

6.1

During the warranty period, whenever a technical problem is encountered with the PCU, BHEL will report the same to the vendor.

Vendor shall ensure that the problem is attended to by their service engineer within two days from the date of reporting.

7.0 Documents to be submitted after receipt of purchase order

7.1

Following documents shall be submitted for approval within seven days from date of purchase order.

1. GTP/Datasheet
2. General Arrangement of PCU with LT output Switchgear (either integrated in PCU or in separate panel) (with overall dimensions, plan, elevation, side views, bill of materials of major functional components viz. Inverter stack, IGBTs, heat sinks, cooling fans, air filters, capacitors, inductors, power supplies, sensors, protection cards, fuses, MCBs, ACBs, Surge protection devices, isolator switches, breakers, contactors, displays, push buttons, data loggers, communication devices, ports etc, make / part number / rating / quantity of these components.
3. Panel details of doors, frames, gland plates, bus bars, cables, earth terminals, base channel, paint finish, IP class, applicable standards.
4. General arrangement of front panel with displays, push buttons, lamp indicators, etc.
5. General arrangement showing DC input termination details viz. bus bars with details of holes for cable connections, bus bar supports, fuses, etc.
6. General arrangement showing AC output termination details viz. bus bars with details of holes for cable connection, bus bar supports, etc
7. BOM for complete PCU including all major components of PCU, AC and DC Combiner Panels
8. Mandatory Spares List

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		A4-11	9. Exhaust Duct Drg including placement and complete mounting arrangement drg inside control room for which final control room layout drg shall be provided to vendor 10. HVAC calculations 11. All the above documents shall be submitted to CUSTOMER for final approval – GA and Layout Drgs, Foundation Drgs, Datasheet, Detailed BOM, Manufacturing Quality Plan (MQP) including Final Test Procedure. All these documents shall be submitted in soft copy in CUSTOMER format with CUSTOMER drawing nos. which shall be informed during detailed engineering. Vendor shall proceed with Manufacturing only after final approval of all the listed documents.	
			8.0 Documents to be submitted along with consignment 8.1 Following documents shall be submitted at the time of dispatch: a. Test reports on individual PCUs b. Technical manual with system specifications, installation guidelines, commissioning guidelines, schematic drawings, circuit board overlays, system set points, calibration settings, hardware settings, cable schedule, general arrangement drawings, panel details. c. Operation and Maintenance manual shall be provided in soft and hard copy including final As Built and tested drgs and datasheet, test reports, catalogs of individual components, schematic drgs d. Product catalogues / datasheets of disconnect switch, breakers, contactors, IGBTs, DC/AC capacitors, power supplies, protection devices, communication devices, sensors, meters etc e. List of loose items supplied along with panel. NOTE: Interconnecting copper busbars if applicable (between DC combiner panel and PCU section) which are required to be fixed at site shall be supplied loose in a separate box. This shall be identified as a separate line item in the total packing list of PCU. These busbars should not be placed/tied inside the panel during despatch.	

SPECIAL COMMERCIAL CONDITIONS OF CONTRACT (SCC) - for foreign vendors				
RFQ No. ANKBOS0002 Dtd.06.01.2017 Due Date (Tech Bid): 17.01.2017				
Sl. No.	Terms	BHEL Term	Confirmation	Deviation/Remarks
1	Pre-Qualification Criteria (PQC)	(a) Vendor shall be OEM of grid-connected power conditioning units (PCUs/inverters). As evidence to this, vendor shall enclose (a) their product catalog and (b) a self-certified letter declaring the address of their existing manufacturing and testing works.	Complied	
		(b) Vendor should have commissioned cumulative total of at least 10MW of 3-phase grid-connected PCUs/ inverters of 1250kW and above for solar PV power plants in India during the past three years with ref to the date of opening of Part-1 bid. As evidence to this, vendor shall enclose copies of purchase orders along with	Complied	
		(c) Vendor shall have service centre in India for carrying out commissioning and after-sales service activities. As evidence to this, vendor shall enclose the addresses of their service centre in India.	Complied	
2	Bidding	(a) Bid has to be submitted as Two Part – Techno Commercial Bid (Part-1) & Price Bid (Part-II). Bids shall be submitted through e-Procurement portal https://bhel.e-procurement.in of M/s. Mjunction Services Limited.	Complied	
		(b) SCC & Annexure A1 to be submitted along with Technical bid (Part-I) & Annexure A2 to be submitted along with Price bid (Part-II).	Complied	
		(c) Clause-wise compliance to BHEL Purchase specification along with all documents as called in Technical specification to be submitted along with technical bid (Part-1).	Complied	
3	Price basis:	Firm i.e., from the date of PO to completion of supply if I&C is not applicable. If I&C is in supplier's scope, then the prices shall remain firm till commissioning & handing-over of the complete system. (PVC clause not acceptable).	Complied	
4	Terms of Delivery:	Clf Seaport/ Clf Airport/FCA Airport (Indicate name of Seaport/Airport)	Complied	
5	Delivery Period:	(a) Supply : 6 (Six) weeks from the date of Drawing approval. Drawing Submission : 1 (One) week from the date of Purchase Order.	Acceptable / Not acceptable	
		(b) Delivery is the essence of this contract. All the supplies to be completed on or before 31st March 2017.	Acceptable / Not acceptable	
		(c) I&C : 2 (Two) weeks from the date of supply.	Acceptable / Not acceptable	
6	Payment Term:	(a) Supply: 1) 80% of the basic value (excluding I&C charges) will be paid with 45 days credit, against Sight draft, from the date of AWB/BOL on submission of complete set of documents as in PO. 2) 10% of basic supply value will be paid on completion of I&C against submission of supplementary invoice along with proof of completion of I&C along with I&C charges (if any). 3) Balance 10% (retention money) against submission of supplementary invoice along with PBG valid for Warranty Period+3 months Claim Period from BHEL Consortium Bank. (b) I&C: 100% on completion of I&C/Supervision and certification line item wise on pro-rata basis. Note : In exceptional cases, if vendor fails to submit PBG after supplies, vendors can also accept for the final 10% payment, payable after the warranty period + 3 months of claim period against supplementary invoice subject to the completion of commissioning (if applicable) as PBG is linked to Warranty period.	Acceptable / Not acceptable	
		(b) For any deviation in payment term, the offer will be liable for loading as per Clause G of ITB.	Acceptable / Not acceptable	
7	Evaluation of L1 vendor	Over all L1 (both projects combined) of Supply + Spares + I&C on "FOR" basis to sites will only be considered.	Complied	
8	Warranty :	Warranty for Supply : 63 months from Supply or 60 months from I&C whichever is earlier.	Acceptable / Not acceptable	
9	Pre Shipment Inspection	(a) Pre Shipment Inspection will be carried out by BHEL/Customer for which test report shall be sent one week in advance.	Acceptable / Not acceptable	
		(b) Pre Shipment Inspection charges , if any, shall be considered while evaluating your offer to arrive at "Total Cost to BHEL". The charges for the same shall be informed to you before Price Bid Opening/Reverse Auction.	Acceptable / Not acceptable	
10	Penalty	(a) Supply: Penalty of 0.5% per week at the basic price of the good for undelivered quantity of supply portion, subject to a maximum of 10%. For Supply, Pre Shipment Inspection Call Letter Date (Receipt of test report) will be treated as delivery for purpose of penalty.	Acceptable / Not acceptable	
		(b) For any deviation in penalty term, the offer will be liable for loading as per Clause No. G, Point No.(b) of ITB.	Acceptable / Not acceptable	
11	PBG	PBG shall be furnished in the BHEL prescribed format.	Acceptable / Not acceptable	
12	Validity:	Quotation should remain valid for a period of 90 days from the due date.	Acceptable / Not acceptable	
13	Bank charges (If applicable):	(a) All Bank charges to seller's account	Acceptable / Not acceptable	
		(b) Deviation will be liable for loading as per CLG of ITB	Acceptable / Not acceptable	
14	Reverse Auction:	BHEL reserves the right to conduct Reverse auction. Procedure for the same will be informed by BHEL .	Acceptable / Not acceptable	
15	DUN No.	Please mention Dun & Bradstreet No.(DUN No.)		
16	Consignment Details	Weight and Dimension of consignment with packing.	Furnished / To be furnished	
17	Despatch Documents:	Despatch documents include Air Waybill/Bill of Lading, Invoice, Packing list, PSI letter copy and Warranty certificate.	Acceptable / Not acceptable	
		One copy of Invoice, Packing list and Air Way Bill /Bill of Lading shall be faxed/emailed immediately after despatch. Also one copy of packing list to be kept inside each box for easy identification of material at site.		
18	Other terms & conditions	For any other Terms and Conditions, kindly refer to the following: A: ITB (document ref :SCPV: BOS: ITB - Rev 01) B: GCC (document ref: SCPV: BOS: GCC - Rev 01)	Acceptable / Not acceptable	
19	Break-up of spares	Break-up of spares with quantity to be enclosed with Part-1 Bid. Item-wise price break-up of spares to be enclosed with Part-2 Bid.	Complied	

TECHNICAL BID ENCLOSURE FOR COMPLIANCE OF QUOTE : UNPRICED BID (Foreign Vendors)							
RFQ No. ANKBOS0002 Dtd.06.01.2017 Due Date (Tech Bid): 17.01.2017							
Sl No.	Material Code	DESCRIPTION	PROJECT	QTY	UNIT	QUOTED	CURRENCY
1	PS0679064222	Supply of 1250kVA PCU	KPCL HAVERI	8	NO	YES/NO	
2	PS0679053832	Supply of 1250kVA PCU	BEL BOLANGIR	6	NO	YES/NO	
3	PS0679064230	Supply of Duct for 1250kVA PCU	KPCL HAVERI	8	ST	YES/NO	
4	PS0679053840	Supply of Duct for 1250kVA PCU	BEL BOLANGIR	6	ST	YES/NO	
5	PS0679064265	Supply of Spares for 1250kVA PCU	KPCL HAVERI	1	ST	YES/NO	
6	PS0679054111	Supply of Spares for 1250kVA PCU	BEL BOLANGIR	1	ST	YES/NO	
7	PS0679064249	I&C of 1250kVA PCU	KPCL HAVERI	8	AU	YES/NO	
8	PS0679054090	I&C of 1250kVA PCU	BEL BOLANGIR	6	AU	YES/NO	
9	PS0679064257	I&C of duct for 1250kVA PCU	KPCL HAVERI	8	AU	YES/NO	
10	PS0679054103	I&C of duct for 1250kVA PCU	BEL BOLANGIR	6	AU	YES/NO	

Note:

1. The entire quantity for both sites shall be procured from a single vendor.
2. The above format only shall be used for compliance.No changes are acceptable.
3. BHEL is trying to avail Customs Duty & Excise duty exemption. Successful bidder shall support with all relevant documents.

AUTHORISED SIGNATORY WITH SEAL

PRICE BID (Foreign Vendors)								
RFQ No. ANKBOS0002 Dtd.06.01.2017 Due Date (Tech Bid): 17.01.2017								
Sl No.	Material Code	DESCRIPTION	PROJECT	QTY (combined for 2 sites)	UNIT	Unit Rate	Total Value (Rs.) (Rate X Qty)	CURRENCY
1	PS0679064222	Supply of 1250kVA PCU	KPCL HAVERI	8	NO			
2	PS0679053832	Supply of 1250kVA PCU	BEL BOLANGIR	6	NO			
3	PS0679064230	Supply of Duct for 1250kVA PCU	KPCL HAVERI	8	ST			
4	PS0679053840	Supply of Duct for 1250kVA PCU	BEL BOLANGIR	6	ST			
5	PS0679064265	Supply of Spares for 1250kVA PCU	KPCL HAVERI	1	ST			
6	PS0679054111	Supply of Spares for 1250kVA PCU	BEL BOLANGIR	1	ST			
7	PS0679064249	I&C of 1250kVA PCU	KPCL HAVERI	8	AU			
8	PS0679054090	I&C of 1250kVA PCU	BEL BOLANGIR	6	AU			
9	PS0679064257	I&C of duct for 1250kVA PCU	KPCL HAVERI	8	AU			
10	PS0679054103	I&C of duct for 1250kVA PCU	BEL BOLANGIR	6	AU			

Note:

1. The entire quantity for both sites shall be procured from a single vendor.
2. The above format only shall be used for compliance.No changes are acceptable.
3. BHEL is trying to avail Customs Duty & Excise duty exemption. Successful bidder shall support with all relevant documents.

AUTHORISED SIGNATORY WITH SEAL

SPECIAL COMMERCIAL CONDITIONS OF CONTRACT (SCC) - for indigenous vendors				
RFQ No. ANKBOS0002 Dtd.06.01.2017 Due Date (Tech Bid): 17.01.2017				
Sl No.	Terms	BHEL Term	Confirmation	Deviation / Remarks
1	Pre-Qualification Criteria (PQC)	(a) Vendor shall be OEM of grid-connected power conditioning units (PCUs/inverters). As evidence to this, vendor shall enclose (a) their product catalog and (b) a self-certified letter declaring the address of their existing manufacturing and testing works.	Complied	
		(b) Vendor should have commissioned cumulative total of at least 10MW of 3-phase grid-connected PCUs/ inverters of 1250kW and above for solar PV power plants in India during the past three years with ref to the date of opening of Part-1 bid. As evidence to this, vendor shall enclose copies of purchase orders along with commissioning certificate.	Complied	
		(c) Vendor shall have service centre In India for carrying out commissioning and after-sales service activities. As evidence to this, vendor shall enclose the addresses of their service centre in India.	Complied	
2	Bidding	(a) Bid has to be submitted as Two Part – Techno Commercial Bid (Part-I) & Price Bid (Part-II). Bids shall be submitted through e-Procurement portal https://bheleps.buyjunction.in of M/s. Mjunction Services Limited.	Complied	
		(b) SCC & Annexure B1 to be submitted along with Technical bid (Part-I) & Annexure B2 to be submitted along with Price bid (Part-II).	Complied	
		(c) Clause-wise compliance to BHEL Purchase specification along with all documents as called in Technical specification to be submitted along with technical bid(Part-1).	Complied	
3	Price Basis	Firm i.e., from the date of PO to completion of supply if I&C is not applicable. If I&C is in supplier's scope, then the prices shall remain firm till commissioning & handing-over of the complete system.(PVC clause not acceptable).	Complied	
4	Terms of Delivery	Free On Road Basis to following Project sites : (a) KPCL-Haveri, Karnataka (b) BEL-Bolangir, Orissa	Complied	
5	Delivery Period	(a) Supply : 6 (Six) weeks from the date of Drawing approval. Drawing Submission : 1 (One) week from the date of Purchase Order.	Acceptable / Not acceptable	
		(b) Delivery is the essence of this contract. All the supplies to be completed on or before 31st March 2017.	Acceptable / Not acceptable	
		(c) I&C : 2 (Two) weeks from the date of supply.	Acceptable / Not acceptable	
6	Payment Term	(a) Supply: 1) 80% of basic Supply value + 100% of taxes, duties and freight charges will be paid with 45 days credit from the receipt of material at site or 15 days credit from the date of submission of complete set of documentation whichever is later. 2) 10% of basic supply value will be paid on completion of I&C against submission of supplementary invoice along with proof of completion of I&C along with I&C charges (if any). 3) Balance 10% (retention money) against submission of supplementary invoice along with PBG valid for Warranty Period+3 months Claim Period from BHEL Consortium Bank. (b) I&C/Supervision: 100% on completion of I&C/Supervision and certification line item wise on pro-rata basis. Note : In exceptional cases, if vendor fails to submit PBG after supplies, vendors can also accept for the final 10% payment, payable after the warranty period + 3 months of claim period against supplementary invoice subject to the completion of commissioning (if applicable) as PBG is linked to Warranty period.	Acceptable / Not acceptable	
		(b) For any deviation in payment term, the offer will be liable for loading as per Clause G of ITB.	Acceptable / Not acceptable	
7	Excise Duty	(a) To confirm whether applicable. If applicable, indicate prevailing rate of Excise duty.	Applicable / Not applicable	Prevailing rate of Excise duty : %
		(b) BHEL is trying to avail Customs Duty & Excise duty exemption through MNRE. Successful bidder shall support with all relevant documents failing which ED shall not be reimbursed.	Complied	
8	Sales Tax	(a) To confirm whether applicable. If applicable, indicate prevailing rate of Sales Tax against Form C.	Applicable / Not applicable	Prevailing rate of Sales Tax against Form C: %
		(b) For issue of form "C", vendor has to furnish "E1/E2" form. Please confirm that "E1/E2 Sale form" will be submitted.	Acceptable / Not acceptable	
		(c) Wherever E1/E2 transactions are made, CST paid by sub vendor will not be reimbursed (As it is input cost to vendor)	Complied	
9	Value Added Tax	Confirm if VAT is applicable. Please indicate VAT rate if applicable.	Applicable / Not applicable	Prevailing rate of VAT : %

10	Service Tax	To confirm whether applicable, if applicable indicate current rate of Service Tax.	Applicable / Not applicable	Prevailing rate of Service Tax: %
		Furnish Service Tax Regn. No. Confirmation that Service Tax register is maintained.		Service Tax Regn. No. S.Tax Register maintained : Yes/No
11	Evaluation of L1 vendor	Over all L1 (both projects combined) of Supply + Spares + I&C on "FOR" basis to sites will only be considered.	Complied	
12	Warranty	Warranty for Supply : 63 months from Supply or 60 months from I&C whichever is earlier.	Acceptable / Not acceptable	
13	Pre Shipment Inspection	(a) Pre Shipment Inspection will be carried out by BHEL/Customer for which test report shall be sent atleast one week in advance.	Acceptable / Not acceptable	
		(b) Pre Shipment Inspection charges , if any, shall be considered while evaluating your offer to arrive at "Total Cost to BHEL".The charges for the same shall be informed to you before Price Bid Opening/Reverse Auction.	Acceptable / Not acceptable	
14	Penalty	(a) Supply: Penalty of 0.5% per week at the basic price of the good for undelivered quantity of supply portion, subject to a maximum of 10%. For Supply, Pre Shipment Inspection Call Letter Date (Receipt of test report) will be treated as delivery for purpose of penalty.	Acceptable / Not acceptable	
		(b) For any deviation in penalty term, the offer will be liable for loading as per Clause No. G, Point No.(b) of ITB.	Acceptable / Not acceptable	
15	Road Permit	Road permit if applicable will be given by BHEL before Dispatch of ordered Items.However, vendor shall give request for road permit 24 hours in advance.	Complied	
16	PBG	PBG shall be furnished in the BHEL prescribed format.	Acceptable / Not acceptable	
17	Despatch Documents	Complete set of despatch documents in 3 sets shall be forwarded to BHEL directly. Despatch documents include Commercial Invoice, Excise Invoice (if ED is applicable), Lorry receipt (L/R), Packing list, PSI letter Copy, Proof of delivery such as MRC (Material Receipt Certificate)/ original acknowledged LR, Insurance intimation letter and Warranty certificate. One set of Invoice, Packing list and L/R shall be emailed immediately after despatch to BHEL-EDN, Bangalore.	Complied	
18	Reverse Auction	BHEL reserves the right to conduct Reverse auction.Procedure for the same will be informed by BHEL .	Acceptable / Not acceptable	
19	Other terms & conditions	For any other Terms and Conditions, kindly refer to the following: A: ITB (document ref :SCPV: BOS: ITB - Rev 01) B: GCC (document ref: SCPV: BOS: GCC - Rev 01)	Acceptable / Not acceptable	
20	Validity	Quotation should remain valid for a period of 90 days from the due date.	Acceptable / Not acceptable	
21	Shipment	Kindly indicate the state from where the shipment will take place.	State/Place	
22	Break-up of spares	Break-up of spares with quantity to be enclosed as part of Part-1 Bid. Item-wise price break-up of spares to be enclosed with Part-2 Bid.	Complied	

AUTHORISED SIGNATORY WITH SEAL

TECHNICAL BID ENCLOSURE FOR COMPLIANCE OF QUOTE : UNPRICED BID (Indigenous Vendors)											
RFQ No. ANKBOS0002 Dtd.06.01.2017 Due Date (Tech Bid): 17.01.2017											
Sl No.	Material Code	DESCRIPTION	PROJECT	QTY	UNIT	QUOTED	TAXES				Remarks
							ED %	CST%	VAT %	S TAX%	
1	PS0679064222	Supply of 1250kVA PCU	KPCL HAVERI	8	NO	YES/NO				NA	Taxes Extra
2	PS0679053832	Supply of 1250kVA PCU	BEL BOLANGIR	6	NO	YES/NO				NA	Taxes Extra
3	PS0679064230	Supply of Duct for 1250kVA PCU	KPCL HAVERI	8	ST	YES/NO				NA	Taxes Extra
4	PS0679053840	Supply of Duct for 1250kVA PCU	BEL BOLANGIR	6	ST	YES/NO				NA	Taxes Extra
5	PS0679064265	Supply of Spares for 1250kVA PCU	KPCL HAVERI	1	ST	YES/NO				NA	Taxes Extra
6	PS0679054111	Supply of Spares for 1250kVA PCU	BEL BOLANGIR	1	ST	YES/NO				NA	Taxes Extra
7	PS0679064249	I&C of 1250kVA PCU	KPCL HAVERI	8	AU	YES/NO	NA	NA	NA		Taxes Extra
8	PS0679054090	I&C of 1250kVA PCU	BEL BOLANGIR	6	AU	YES/NO	NA	NA	NA		Taxes Extra
9	PS0679064257	I&C of duct for 1250kVA PCU	KPCL HAVERI	8	AU	YES/NO	NA	NA	NA		Taxes Extra
10	PS0679054103	I&C of duct for 1250kVA PCU	BEL BOLANGIR	6	AU	YES/NO	NA	NA	NA		Taxes Extra
11	Freight Charge including Service Tax on Freight		KPCL HAVERI	LUMPSUM		YES/NO	NA	NA	NA	NA	Freight: Included/Extra
12	Freight Charge including Service Tax on Freight .		BEL BOLANGIR	LUMPSUM		YES/NO	NA	NA	NA	NA	Freight: Included/Extra

Note:

1. The entire quantity for both projects shall be procured from a single vendor.Overall L1 of both sites on FOR basis shall be considered.
2. The quoted prices shall be on "FOR" basis to project sites.
3. Please indicate taxes : ED, VAT/CST and Service Tax clearly applicable as on date.
4. The above format only shall be used for compliance.No changes are acceptable.
5. Taxes will be considered extra. Please quote only the basic rates.
6. Indicate whether freight charge is included in quoted rate or will be charged extra.In absence of clarity, quoted rate will be considered as inclusive of freight charges.(If the offer contains the freight value at actuals, it will be considered as all inclusive).
7. BHEL is trying to get concession on Excise Duty under supply for solar power project. At the time of clearance of goods we may issue exemption certificate.In such case, ED will be exempted but not reimbursed. At present, please quote with applicable rate without concession of ED for comparison.
8. Insurance will be in BHEL scope.

PRICED BID (Indigenous Vendors)												
RFQ No. ANKBOS0002 Dtd.06.01.2017 Due Date (Tech Bid): 17.01.2017												
SI No.	Material Code	PROJECT	DESCRIPTION	QTY	UNIT	UNIT RATE	Total Value (Rs.) (Rate X Qty)	TAXES				Remarks
								ED %	CST%	VAT %	S TAX%	
1	PS0679064222	KPCL-HAVERI	Supply of 1250kVA PCU	8	NO						NA	Taxes Extra
			Unit rate in words									
2	PS0679053832	BEL-BOLANGIR	Supply of 1250kVA PCU	6	NO						NA	Taxes Extra
			Unit rate in words									
3	PS0679064230	KPCL-HAVERI	Supply of Duct for 1250kVA PCU	8	ST						NA	Taxes Extra
			Unit rate in words									
4	PS0679053840	BEL-BOLANGIR	Supply of Duct for 1250kVA PCU	6	ST						NA	Taxes Extra
			Unit rate in words									
5	PS0679064265	KPCL-HAVERI	Supply of Spares for 1250kVA PCU	1	ST						NA	Taxes Extra
			Unit rate in words									
6	PS0679054111	BEL-BOLANGIR	Supply of Spares for 1250kVA PCU	1	ST						NA	Taxes Extra
			Unit rate in words									
7	PS0679064249	KPCL-HAVERI	I&C of 1250kVA PCU	8	AU			NA	NA	NA		Taxes Extra
			Unit rate in words									
8	PS0679054090	BEL-BOLANGIR	I&C of 1250kVA PCU	6	AU			NA	NA	NA		Taxes Extra
			Unit rate in words									
9	PS0679064257	KPCL-HAVERI	I&C of duct for 1250kVA PCU	8	AU			NA	NA	NA		Taxes Extra
			Unit rate in words									
10	PS0679054103	BEL-BOLANGIR	I&C of duct for 1250kVA PCU	6	AU			NA	NA	NA		Taxes Extra
			Unit rate in words									
11		KPCL-HAVERI	Freight Charge including Service Tax on Freight	LUMPSUM				NA	NA	NA	NA	Freight: Included/Extra
			Freigh Charges in words									
12		BEL-BOLANGIR	Freight Charge including Service Tax on Freight	LUMPSUM				NA	NA	NA	NA	Freight: Included/Extra
			Freigh Charges in words									

Note:

- The entire quantity for both projects shall be procured from a single vendor. Overall L1 of both sites on FOR basis shall be considered.
- The quoted prices shall be on "FOR" basis to project sites.
- Please indicate taxes : ED, VAT/CST and Service Tax clearly applicable as on date.
- The above format only shall be used for compliance. No changes are acceptable.
- Taxes will be considered extra. Please quote only the basic rates.
- Indicate whether freight charge is included in quoted rate or will be charged extra. In absence of clarity, quoted rate will be considered as inclusive of freight charges. (If the offer contains the freight value at actuals, it will be considered as all inclusive).
- BHEL is trying to get concession on Excise Duty under supply for solar power project. At the time of clearance of goods we may issue exemption certificate. In such case, ED will be exempted but not reimbursed. At present, please quote with applicable rate without concession of ED for comparison.
- Insurance will be in BHEL scope.



ಭಾರತ್ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್
भारत हेवी इलेक्ट्रिकल्स लिमिटेड

Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division

PB 2606 , Mysore Road Bangalore , 560026 INDIA

SCPV: BOS: ITB - Rev 01

INSTRUCTIONS TO BIDDERS (ITB)

Bidders are requested to read the instructions carefully and submit their quotations covering all the points:

A. GENERAL INSTRUCTIONS:

1. Any Purchase Order resulting from this enquiry shall be governed by the Instructions to Bidders (document reference: SCPV: BOS: ITB – Rev 01), General Conditions of Contract (document reference: SCPV: BOS: GCC - Rev 01) and Special Conditions of Contract (document reference: SCPV: BOS: SCC: I - Rev 01/ SCPV: BOS: SCC: F - Rev 01), if any, of the enquiry.
2. Any deviations from or additions to the “General Conditions of Contract” or “Special Conditions of Contract” require BHEL’s express written consent. The general terms of business or sale of the bidder shall not apply to this tender.
3. Bidders (also includes the term suppliers / contractors wherever used in this document) are instructed to quote their most competitive price and best delivery, etc. in the offer. Prices should be indicated in both figures & words. **(Please also refer clause 11 under section B)**
4. Regret letter (either through post or by mail) indicating reasons for not quoting must be submitted without fail, in case of non-participation in this tender. If a bidder fails to respond against 3 consecutive tenders for the same item, he will be liable for removal as a registered vendor of BHEL.
5. Procurement directly from the manufacturers shall be preferred. However, if the OEM / Principal insist on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer / supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer / supplier or the manufacturer / supplier could bid directly but not both. In case bids are received from the manufacturer / supplier and his agent, bid received from the agent shall be ignored.
6. Consultant / firm (and any of its affiliates) shall not be eligible to participate in the tender/s for the related goods for the same project if they were engaged for consultancy services for the same project.
7. If an Indian representative / associate / liaison office quotes on behalf of a foreign based bidder, such representative shall furnish compulsorily the following documents:
 - a. Authorization letter to quote and negotiate on behalf of such foreign-based bidder.
 - b. Undertaking from such foreign based bidder that such contract will be honored and executed according to agreed scope of supply and commercial terms and conditions.
 - c. Undertaking shall be furnished by the Indian representative stating that the co-ordination and smooth execution of the contract and settlement of shortages / damages / replacement / repair of imported scope till system is commissioned and handed over to customer will be the sole responsibility of the Indian representative / associates / agent / liaison office.
8. In case of imported scope of supply, customs clearance & customs duty payment will be to BHEL account after the consignment is received at Indian Airport / Seaport. Bidders must provide all original documents required for completing the customs clearance along with the shipment. Warehousing charges due to incomplete or missing documentation will be recovered from the supplier’s bill. All offers for imported scope of supply must be made from any of the gateway ports (within the country) indicated. **(Refer Annexure I)**
9. The offers of the bidders who are on the banned list and also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of the banned firms is available on BHEL website: **www.bhel.com**.

10. Business dealings with bidders will be suspended if they are found to have indulged in any malpractices / misconduct which are contrary to business ethics like bribery, corruption, fraud, pilferage, cartel formation, submission of fake/false/forged documents, poor quality, certificates, information to BHEL or if they tamper with tendering procedure affecting the ordering process or fail to execute a contract, or rejection of 3 consecutive supplies or if their firms / works are under strike / lockout for a long period.

B. GUIDELINES FOR PREPARATION OF OFFER:

1. Quotation shall be submitted in Single Part Bid, Two Part Bid or Three Part Bid, as called for in the tender:
 - **SINGLE PART BID:** Technical and Commercial Bid with prices along with price summary & filled in BHEL Standard Commercial terms and conditions in a single sealed envelope.
 - **TWO PART BID:** Unpriced offer i.e. "Techno-commercial Bid" with filled in BHEL Standard Commercial terms and conditions in a sealed envelope **along with the copy of the "Price Bid" without the prices** should be enclosed in one cover and the cover must be super scribed "**Techno-commercial offer** and Priced offer i.e. "Price Bid" containing price summary in a separate sealed envelope and must be super scribed "**Price Bid**". Both these envelopes shall be enclosed in a single sealed envelope super scribed with enquiry number, due date of tender and any other details as called for in the tender document.
 - **THREE PART BID:** Pre-qualification Bid (Part-I), Techno Commercial Bid with filled in BHEL Standard Commercial terms and conditions (Part-II), and Price Bid (Part-III). All three envelopes shall be enclosed in a single sealed envelope super scribed with enquiry number due date of tender and any other details as called for in the tender document.

If any of the offers (Part I, Part II or Part III) are not submitted before the due date and time of submission at the venue/place specified or if any part of the offer is incomplete the entire offer of the bidder is liable for rejection.

2. Supplier shall ensure to super scribe each envelope with RFQ number, RFQ Date, RFQ Due date and time, Item Description and Project clearly & boldly. Also mention on the envelope whether it is "Techno Commercial Bid" or "Price Bid" or "Pre-Qualification Bid". Please ensure complete address, department name and purchase executive name is mentioned on the envelope (before dropping in the tender box or handing over) so that the tender is available in time for bid opening.
3. BHEL standard Commercial Terms and Conditions shall be duly filled, signed & stamped and must accompany Technical-Commercial offer without fail and should be submitted in original only. Photocopy will not be accepted. All documents submitted along with the offer shall be signed and stamped in each page by authorized representative of the bidder.
4. Any of the terms and conditions not acceptable to supplier, shall be explicitly mentioned in the Techno-Commercial Bid. If no deviations are brought out in the offer it will be treated as if all terms and conditions of this enquiry are accepted by the supplier without any deviation.
5. Deviation to this specification / item description, if any, shall be brought out clearly indicating "DEVIATION TO BHEL SPECIFICATION" without fail, as a part of Techno-Commercial Bid. If no deviations are brought out in the offer it will be treated as if the entire specification of this enquiry is accepted without deviation.
6. Suppliers shall submit one set of original catalogue, datasheets, bill of materials, dimensional drawings, mounting details and / or any other relevant documents called in purchase specification as part of Technical Bid.
7. "Price Bid" shall be complete in all respects containing price break-up of all components along with all applicable taxes and duties, packing & forwarding charges (if applicable), freight charges (if applicable) etc. Once submitted no modification / addition / deletion will be allowed in the "Price Bid." Bidders are advised to thoroughly check the unit price, total price to avoid any discrepancy.
8. In addition, bidder shall also quote for erection & commissioning charges (I&C charges), documentation charges, service charges, testing charges (type & routine), training charges, service tax, etc. wherever applicable. The price summary must indicate all the elements clearly.
9. Vendors should indicate "lump sum" charges (including To & Fro Fare, Boarding, Lodging, Local Conveyance etc.) for Supervision of Erection, Commissioning and handing over to customer. The quotation shall clearly indicate scope of work, likely duration of commissioning, pre-commissioning checklist and service tax (if any).
10. Wherever bidders require PAC (Project Authority Certificate) for import of raw materials, components required for Mega

Power Projects, Export Projects, MNRE Concession or other similar projects wherein supplies are eligible for customs duty /Excise duty benefits, lists and quantities of such items and their values (CIF) has to be mentioned in the offer. Prices must be quoted taking into account of such benefits.

11. All quotations shall be free from corrections /overwriting. Corrections if any should be authenticated with signature and seal. Any typographical error, totaling mistakes, currency mistake, multiplication mistake, summing mistakes etc. observed in the price bids will be evaluated as per **Annexure VI** "Guidelines for dealing with Discrepancy in Words & Figures – quoted in price bid". BHEL decision will be final.

C. GUIDELINES FOR OFFER SUBMISSION:

1. Offers / Quotations must be dropped in tender box before 13.00 Hrs. on or before due date mentioned in RFQ. The offers are to be dropped in the proper slot of the Tender Box kept in our reception area with caption "CE, SC&PV, DEFENCE." Tenders are opened on 3 days in a week (Monday/Wednesday/Friday). Tender must be deposited in the slot corresponding to the day (Monday - Box no.4/Wednesday - Box no. 6 /Friday - Box no.8) while depositing the offer. **(This clause will not be applicable for e-tenders).**
2. E-Mail / Internet / EDI offers received in time shall be considered only when such offers are complete in all respects. In case of offers received through E-mail, please send the offer to the email IDs within time of submission of tender.
3. In cases where tender documents are bulky, or due to some reasons tender documents are required to be submitted by hand or through posts/couriers, the offers are to be handed over to purchase officers.
4. Tenders will be opened on due date, time and venue as indicated in the RFQ in the presence of bidders at the venue indicated in the RFQ. In case of e-procurement, bidders can see tender results till seven days after due date and time.
5. Vendor will be solely responsible:
 - a. For submission of offers before due date and time. Offers submitted after due date and time will be treated as "Late offers" and will be rejected.
 - b. For submission of offers in the correct compartment of the tender box based on the day of due date (Monday/Wednesday/Friday). Please check before dropping your offer in the correct tender box.
 - c. For depositing offers in proper sealed condition in the tender box. If the bidder drops the tender in the wrong tender box or if the tender document is handed over to the wrong person BHEL will not be responsible for any such delays.
 - d. For offers received through email/courier etc., suppliers are fully responsible for lack of secrecy on information and ensuring timely receipt of such offers in the tender box before due date & time.
 - e. In case of e-tender, all required documents should be uploaded before due date and time. Availability of power, internet connections, etc. will be the sole responsibility of the vendor. Wherever assistance is needed for submission of e-tenders, help line numbers and executives of service provider of BHEL may be contacted.
Service provider: M-junction
Website address: <https://bheleps.buyjunction.in/>
Helpline no.: 033-66106426/6217/6013/6046/6176 (9:30 am to 5:30 pm)
9163348283/9163348284/9163348285/9163348286/8584008116 (5:30 pm to 8:30 pm)

Purchase Executive / BHEL will not be responsible for any of the activities relating to submission of offer.

D. PROCESSING OFFERS RECEIVED:

1. Any discount / revised offer submitted by the supplier on its own shall be accepted provided it is received on or before the due date and time of offer submission (i.e. Part-I bid). The discount shall be applied on pro-rata basis to all items unless specified otherwise by the bidder.
2. Changes in offers or Revised offers given after Part-I bid opening shall not be considered as a part of the original offer unless such changes / revisions are requested by BHEL.
3. In case there is no change in the technical scope and / or specifications and / or commercial terms & conditions by BHEL, the supplier will not be allowed to change any of their bids after Technical bids are opened (after the due date and time of tender opening of Part-1 Bid).

4. In case of changes in scope and/ or technical specifications and/ or commercial terms & conditions by BHEL and it accounts for price implications from vendors, all techno-commercially acceptable bidders shall be asked by BHEL (after freezing the scope, technical specifications and commercial terms & conditions) to submit the impact of such changes on their price bid. Impact price will be applicable only for changes in technical specification / commercial conditions by BHEL. The impact price must be submitted on or before the cut-off date specified by BHEL and the original price bid and the price impact bid will be opened together at the time of price bid opening. Impact price means only for those items which have been impacted by addition / deletion / changes in the technical specifications or commercial conditions. The impact may be +/- incremental value of the currency in which originally quoted. The impact price bid to be submitted on the cut-off date, time & venue as specified by BHEL. The impact price bid shall be opened along with original price bid.
5. Un-opened bids (including price bids) will be returned to the respective bidders after release of PO and receipt of order acknowledgement from the successful bidder.
6. After receipt of Purchase Order, supplier should submit required documents like drawings, bill of materials, datasheets, catalogues, quality plan, test procedure, type test report , O & M Manuals and / or any other relevant documents as per Specification / Purchase Order, as and when required by BHEL / Customer.
7. Any deviation to the terms and conditions not mentioned in the quotation by supplier in response to this enquiry will not be considered, if put forth subsequently or after issue of Purchase Order, unless clarification is sought for by BHEL EDN and agreed upon in the Purchase Order.
8. Evaluation shall be on the basis of delivered cost (i.e. "Total Cost to BHEL"). As per RFQ terms.
"Total Cost to BHEL" shall include total basic cost, packing & forwarding charges, taxes and duties, inspection charges, freight charges, test charges, insurance, service tax for services, any other cost indicated by vendor for execution of the contract and loading factors (for non-compliance to BHEL Standard Commercial Terms & Conditions). Benefits arising out of Nil Import Duty on Mega Projects, Physical Imports or such 100% exemptions & MNRE Exemptions (statutory benefits), customer reimbursements of statutory duties (like Excise Duty, CST, VAT) will also be taken into account at the time of tender evaluation. (Wherever applicable and as indicated in SCC document of tender)
9. For evaluation of offers in foreign currency, the exchange rate (TT selling rate of SBI) shall be taken as under:

Single part bids:	Date of tender opening
Two/three part bids:	Date of Part-I bid opening
Reverse Auction:	Date of Part-I bid opening

In case of Performance Bank Guarantee (PBG) also, exchange rate will be considered as mentioned above for converting foreign currency to Indian currency and vice versa.

If the relevant day happens to be a bank holiday, then the exchange rate as on the previous working day of the bank (SBI) shall be taken.
10. Ranking (L-1, L-2 etc.) shall be done only for the techno-commercially acceptable offers and on the basis or evaluation of Total Cost to BHEL.

E. INFORMATION ON PAYMENT TERMS:

1. All payments will be through Electronic Fund transfer (EFT). Vendor has to furnish necessary details as per BHEL standard format (**Refer Annexure IV**) for receiving all payments through NEFT. (Applicable for Indian vendors only)
2. Statutory deductions, if any, will be made and the deduction certificate shall be issued. In case vendor does not provide PAN details, the TDS deduction shall be at the maximum percentage stipulated as per the provisions of Income Tax Act. (Applicable for Indian vendors only). Foreign vendors shall submit relevant details of their bankers like Swift Code, Banker's Name & Address etc.
3. Vendors must submit bills & invoices along with required supporting documents in time. Incomplete documentation / delayed submission of invoice / documents will result in corresponding delay in payment.

F. STANDARD PAYMENT TERMS OF BHEL-EDN**Purchase Orders for indigenous procurement****(a) SUPPLY WITH I&C/SUPERVISION:****Supply:**

- 1) 80% of basic Supply value + 100% of taxes, duties and freight charges will be paid with 45 days credit from the receipt of material at site or 15 days credit from the date of submission of complete set of documentation whichever is later.
- 2) 10% of basic supply value will be paid on completion of I&C against submission of supplementary invoice along with proof of completion of I&C along with I&C charges (if any).
- 3) Balance 10% (retention money) against submission of supplementary invoice along with PBG valid for Warranty Period+3 months Claim Period from BHEL Consortium Bank.

I&C/Supervision: 100% on completion of I&C/Supervision and certification line item wise on pro-rata basis.

O&M: 100% O&M charges are payable as per RFQ terms against report certified by BHEL.

(b) SUPPLY ONLY:

- 1) 100% of Basic value with taxes, duties and freight will be paid with 45 days credit from the receipt of material at site or 15 days credit from the date of submission of complete set of documentation whichever is later)+ submission of PBG valid for Warranty Period+ 3 months Claim Period from BHEL Consortium Bank ,if applicable.

Purchase orders for import procurement:**(c) SUPPLY WITH I&C/SUPERVISION:****Supply:**

- 1) 80% of the basic value (excluding I&C charges) will be paid with 45 days credit, against Sight draft, from the date of AWB/BOL on submission of complete set of documents as in PO.
- 2) 10% of basic supply value will be paid on completion of I&C against submission of supplementary invoice along with proof of completion of I&C along with I&C charges (if any).
- 3) Balance 10% (retention money) against submission of supplementary invoice along with PBG valid for Warranty Period+3 months Claim Period from BHEL Consortium Bank.

I&C: 100% on completion of I&C/Supervision and certification line item wise on pro-rata basis.

(d) SUPPLY ONLY:

- 1) 100% of PO value will be paid against Sight draft with 45 days Credit from the date of dispatch or 15 days credit from the date of submission of complete set of documents whichever is later)+ submission of PBG valid for Warranty Period+3 months Claim Period from BHEL Consortium Bank ,if applicable.

Note for (a), (b), (c) and (d): In exceptional cases, if vendor fails to submit PBG after supplies, vendors can also accept for the final 10% payment, payable after the warranty period + 3 months of claim period against supplementary invoice subject to the completion of commissioning (if applicable) as PBG is linked to Warranty period.

G. LOADING FACTORS FOR PAYMENT TERMS & DELAYED DELIVERY:

Loading factors as detailed below will be added to the quoted price (basic) to evaluate the lowest quote for non-compliance of BHEL standard commercial term.

SI No	Deviation on	Nature of Deviation / Offered Terms	Loading %
1.	Payment Terms	For Purchase within India :-	
		1) Credit period less than 45 days	15
		* For Foreign Purchase :-	
		1) Payment through At Sight Letter of Credit	10
		2) Payment through Letter of Credit with usance credit of 45 days	5
		3) Sight Draft with credit period less than 45 days	5
2.	Penalty for Delayed Delivery	1) Non – Acceptance	10
		2) Partial Acceptance (X%)	(10 – X)

*** All bank charges shall be to seller's account. If bank charges of BHEL banker are to BHEL's account then additional loading of 2% on the quoted basic value is applicable.**

Offer/s with payment terms other than the standard payment terms indicated at Clause No.F or Deviated Payment Terms with loading indicated at Clause No.G above are liable for rejection.

NOTES:

- ADVANCE PAYMENT/LC: Quotations with "Advance payment/Inland LC" shall be rejected.
- Basic value of Purchase Order mentioned above will include all components of the purchase order and will exclude only taxes, duties, freight and I&C charges (wherever applicable).
- Wherever the Purchase Order is split into import portion and indigenous portion of supply the retention money will be 10% (as applicable) of both purchase order values put together.
- Non-Compliance of Warranty terms. Offers not complying with Warranty terms as per RFQ Terms is liable for rejection.
- SALE IN TRANSIT/ LOCAL VAT: Sale in transit under section 6(2) of CST is allowed if movement of goods is interstate. In case intra state movement of goods, benefit of sale in transit is not available.
- In case of intrastate movement i.e. supply within same state and VAT is applicable, the vendor shall furnish the respective BHEL's nodal agency TIN no. and address in their invoice. (Refer **Annexure IX**)

H. BANK GUARANTEE (BG) / PERFORMANCE BANK GUARANTEE (PBG):

- Bank guarantee (BG) / Performance bank guarantee (PBG) will be applicable as called in the tender documents. Such PBG shall be valid for a period of Warranty Period + claim period of 3 months for a value equal to 10 % of the basic value of the purchase order. No deviation for the duration of PBG / BG will be permitted.
 - PBG shall be from any of the BHEL consortium of bankers (**refer Annexure V**).
 - PBGs from nationalized banks are also acceptable.

- c. PBG should be sent directly by the bank to the dealing executive mentioned in the purchase order located at the address mentioned in the purchase order. PBG should be in the format indicated. **(Refer Annexure III)**. No deviation to these formats will be allowed.
- d. Confirmation from any of the BHEL consortium of banks or any of the Indian Public Sector Banks is essential for the acceptance of PBGs issued by foreign banks (located outside India).
- e. Expired BGs / PBGs will be returned only after expiry of the claim period or on completion of the contractual obligation.
- f. In case vendor does not accept for submission of PBG, the vendor is liable for rejection on commercial grounds.

I. DOCUMENTS (TRIPLICATE COPIES) REQUIRED AT THE TIME OF DISPATCH FOR PROCESSING OF BILL:

1. FOR INDIGENOUS SCOPE OF SUPPLY:

For Supply: Invoice in Triplicate, Lorry receipt (LR) copy, Packing List, PSI Call Letter Copy, Proof of delivery such as MRC (Material Receipt Certificate)/ original acknowledged LR, Insurance intimation Letter and Warranty Certificate. Note that document pertaining to Proof of delivery shall clearly mention number of boxes/panels etc which shall be in line with the Packing list.

For I&C: Supplementary Invoice in Triplicate with copy of I&C Certificate (Proof of Completion of I&C).

For PBG: Supplementary Invoice in Triplicate with copy of PBG. However, PBG should reach concerned Purchase Officer directly from the Bank.

2. FOR IMPORTED SCOPE OF SUPPLY:

For Supply: Invoice in Triplicate, Air Way Bill/Bill of Lading, Packing List, PSI Call Letter Copy, and Warranty Certificate.

For I&C: Supplementary Invoice in Triplicate with copy of I&C Certificate (Proof of Completion of I&C).

For PBG: Supplementary Invoice in Triplicate with copy of PBG. Both PBG & supplementary invoice should reach concerned Purchase Officer directly from the Bank.

J. PROVISIONS APPLICABLE FOR MSE VENDORS (MICRO AND SMALL ENTERPRISES)

Vendors who qualify as MSE vendors are requested to submit applicable certificates (as specified by the Ministry of Micro, Small and Medium Enterprises) at the time of vendor registration. Vendors have to submit any of the following documents along with the tender documents in the Part I / Technical bid cover to avail the applicable benefits.

- a. Valid NSIC certificate or
- b. Entrepreneur's Memorandum part II (EM II) certificate (deemed valid for 2 years).
- c. EM II certificate with CA certificate **(in the prescribed format given in Annexure VIII)** applicable for the year certifying that the investment in plant and machinery of the vendor is within permissible limits as per the MSME Act 2006 for relevant status where the deemed validity is over.
- d. Documents submitted for establishing the credentials of MSE vendors must be valid as on the date of part I / technical bid opening for the vendors to be eligible for the benefits applicable for MSE vendors. Documents submitted after the Part I / Technical bid opening date will not be considered for this tender.

PURCHASE PREFERENCE FOR MSE VENDORS:

- e. MSE vendors quoting within a price band of L1 + 15% shall be allowed to supply up to 20% of the requirement against this tender provided.
 - 1. The MSE vendor matches the L1 price.
 - 2. L1 price is from a non MSE vendor.
 - 3. L1 price will be offered to the nearest vendor nearest to L1 in terms of price ranking (L2 - nearest to L1). In case of non-acceptance by the MSE vendor (L2) next ranking MSE vendor will be offered who is within the L1 + 15% band (if L3 is also within 15% band).
 - 4. 20% of the 20% (i.e. 4% of the total enquired quantity) will be earmarked for SC/ST owned MSE firms provided conditions as mentioned in (1) and (2) are fulfilled.
 - 5. In case no vendor under SC / ST category firms are meeting the conditions mentioned in (1) and (2) or have not participated in the tender, in such cases the 4% quantity will be distributed among the other eligible MSE vendors who have participated in the tender.

6. Serial no. 1 to 5 will not be applicable wherever it is not possible to split the tendered quantity / items on account of customer contract requirement, or the items tendered are systems. Such information that tendered quantity will not be split will be indicated in the SCC.

K. INTEGRITY COMMITMENT IN THE TENDER PROCESS, AND EXECUTION OF CONTRACTS:

1. Commitment by BHEL:

BHEL commits to take all measures necessary to prevent corruption in connection with the Tender process and execution of the Contract. BHEL will, during the tender process, treat all bidder / suppliers in a transparent and fair manner, and with equity.

2. Commitment by Bidder(s)/ Contractor(s):

- a. The Bidder(s)/ Contractor(s) commit(s) to take all measures to prevent corruption and will not directly or indirectly try to influence any decision or benefit which he is not legally entitled to.
- b. The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding or any actions to restrict competition.
- c. The Bidder(s)/ Contractor(s) will not commit any offence under the relevant Acts. The Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain or pass on to others, any information or document provided by BHEL as part of business relationship.
- d. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to the relevant guidelines issued from time to time by Government of India/ BHEL.

If the Bidder(s) / Contractor(s), before award or during execution of the Contract commit(s) a transgression of the above or in any other manner such as to put his reliability or credibility in question, BHEL is entitled to disqualify the Bidder(s) / Contractor (s) from the tender process or terminate the contract and/ or take suitable action as deemed fit.

L. FRAUD PREVENTION POLICY:

The bidder along with its associate/collaborators/sub-contractors/sub-vendors/consultants/service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice. Fraud Prevention policy and List of Nodal Officers shall be hosted on BHEL website, vendor portals of Units/regions intranet.

PURCHASE EXECUTIVE



ಭಾರತ್ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್
भारत हेवी इलेक्ट्रिकल्स लिमिटेड

Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division

PB 2606 , Mysore Road Bangalore , 560026 INDIA

SCPV: BOS: GCC - Rev 01

GENERAL COMMERCIAL CONDITIONS FOR CONTRACT (GCC)

These 'General Commercial Conditions for Contract for Purchase' hereinafter referred to as GCC apply to all enquiries, tenders, requests for quotations, orders, contracts and agreements concerning the supply of goods and the rendering of related services (hereinafter referred to as "deliveries") to Bharat Heavy Electricals Limited and any of its units, regions or divisions (hereinafter referred to as "BHEL" or the Purchaser) or its projects / customers.

Any deviations from or additions to these GCC require BHEL's express written consent. The general terms of business or sale of the vendor shall not apply to BHEL. Acceptance, receipt of shipments or services or effecting payment shall not mean that the general terms of business or sale of the vendor have been accepted.

Orders, agreements and amendments thereto shall be binding if made or confirmed by BHEL in writing. Only the Purchasing department of BHEL is authorized to issue the Purchase Order or any amendment thereof.

Definitions: Throughout these conditions and in the specifications, the following terms shall have the meanings assigned to them, unless the subject matter or the context requires otherwise.

- a) 'The Purchaser' means Bharat Heavy Electricals Limited, Electronics division, Mysore road, Bangalore 560 026, a Unit of Bharat Heavy Electricals Limited (A Govt. of India Undertaking) incorporated under the Companies Act having its registered office at BHEL House, Siri Fort, New Delhi-110049, India and shall be deemed to include its successors and assigns. It may also be referred to as BHEL.
- b) 'The vendor' means the person, firm, company or organization on whom the Purchase Order is placed and shall be deemed to include the vendor's successors, representative heirs, executors and administrator as the case may be. It may also be referred to as Seller, Contractor or Supplier.
- c) 'Contract' shall mean and include the Purchase Order incorporating various agreements, viz. tender/ RFQ, offer, letter of intent / acceptance / award, the General Conditions of Contract and Special Conditions of Contract for Purchase, Specifications, Inspection / Quality Plan, Schedule of Prices and Quantities, Drawings, if any enclosed or to be provided by BHEL or his authorized nominee and the samples or patterns if any to be provided under the provisions of the contract.
- d) 'Parties to the Contract' shall mean the 'The Vendor' and the Purchaser as named in the main body of the Purchase Order.
- e) "Bidder" shall mean duly established reputed organisation, manufacturer etc. having requisite financial and technical capability and experience of participating in the bid invited by the purchaser for the tender.
- f) Bid- The term "bid" or "bidding" can also relate to the documented Offer submitted in response to a request for quotation (RFQ) /Tender.

Interpretation:

In the contract, except where the context requires otherwise:

- a) words indicating one gender include all genders;
- b) words indicating the singular also include the plural and words indicating the plural also include the singular;
- c) provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing, and
- d) "Written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record.

Applicable Conditions:

1. **Price Basis:** All prices shall be firm until the purchase order is executed / completed in all respects. No price variations / escalation shall be permitted unless otherwise such variations / escalations are provided for and agreed by BHEL in writing in the purchase order.
2. **Validity:** The offer will be valid for a period of 90 days from the date of technical bid opening date. Validity beyond 90 days, if required, will be specified in the SCC (special conditions of contract).
3. **Taxes & Duties:** Taxes as mentioned in the Contract Price or Price Schedule shall be paid to the Contractor subject to the Contractor complying with all the statutory requirements and furnishing the relevant documents including error free invoices containing detailed break-up of the taxes. Any duties, levies or taxes not mentioned in Contract Price or Price Schedule but applicable as per any statute(s) shall be deemed to be included in the Contract price and shall be to the account of the Contractor.
The Contractor shall bear and pay all the costs, liabilities, levies, interest, penalties in respect of non-compliances of any legal requirements as per various statutory provisions. The contractor shall keep the owner indemnified at all times from any tax liability, interest, penalties or assessments that may be imposed by the statutory authorities for non-compliances or non-observation of any statutory requirements by the Contractor.
4. **Ordering and confirmation of Order:** Vendor shall send the order acceptance on their company letter head within two weeks from the date of Purchase Order or such other period as specified / agreed by BHEL. BHEL reserves the right to revoke the order placed if the order confirmation differs from the original order placed. The acceptance of goods/services/supplies by BHEL as well as payments made in this regard shall not imply acceptance of any deviations.
The purchase order will be deemed to have been accepted if no communication to the contrary is received within two weeks (or the time limit as specified / agreed by BHEL) from the date of the purchase order.
5. **Documentation:** After receipt of Purchase Order, vendor should submit required documents like drawings, bill of materials, datasheets, catalogues, quality plan, test procedure, type test report , O & M Manuals and/or any other relevant documents as per Specification/Purchase Order, as and when required by BHEL/Customer.
At any stage within the contract period, the vendor shall notify of any error, fault or other defect found in BHEL's documents /specifications or any other items for reference. If and to the extent that (taking account of cost and time) any vendor exercising due care would have discovered the error, fault or other defect when examining the documents/specifications before submitting the tender, the time for completion shall not be extended. However if errors, omissions, ambiguities, inconsistencies, inadequacies or other defects are found in the vendor's documents, they shall be corrected at his cost, notwithstanding any consent or approval.
6. **TERMS OF DELIVERY:**
FOR IMPORTED PURCHASE:
Price offered shall be for goods packed and delivered CIF Seaport/ International Airport (FCA) including packing, forwarding, Handling, Ancillary charges like processing of Sight Draft, negotiation charges of bank, Export declaration, Certificate of origin etc.
Packing shall be Air/Sea worthy, best suitable for trans-shipment and to take care of transit damages. If containerized, no. of containers & size of container shall be mentioned. Packing weight (gross & net) Packing dimensions shall be given prior to shipment to ascertain whether the consignment can be carried on standard cargo in contract or as ODC.
Wooden packing material for all the foreign consignments should be treated as per ISPM-15 & Fumigation / Phytosanitary certificate to be submitted to the freight forwarders/ BHEL along with the invoice, B/L, packing list etc.
Vendors shall indicate the name of International Airport/Seaport. The consignment shall be handed over to BHEL approved freight forwarder as mentioned in PO.

FOR INDIGENOUS PURCHASE:

Equipment shall be delivered on "FOR SITE" basis, inclusive of freight, packing, insurance & forwarding charges.

Packing shall be Road / Rail / Air / Sea worthy, best suitable for transshipment and to take care of transit damages. Smaller consignments can be dispatched through Courier services/ RPP with the prior approval of the purchasing Executive.

Deviation for the delivery term is liable for rejection.

7. Penalty:

For delay in delivery: In the event of delay in agreed contractual delivery as per Purchase Order, penalty @ 0.5 % (half percent) per week or part thereof but limited to a max of 10% (ten percent) value of undelivered portion (basic material cost) will be applicable. Delivery will commence from the date of document approval by customer / BHEL or date of issue of manufacturing clearance, whichever is later. The date for which Inspection call is issued by vendor along with test certificates / test reports / Certificate of Conformance / calibration reports, as proof of completion of manufacturing will be treated as date of deemed delivery for penalty calculation. In the absence of furnishing such document indicated above as proof of completion of manufacturing along with inspection call, actual date of inspection will be considered as date of deemed delivery and BHEL will not be responsible for delay in actual date of inspection.

Penalty for delayed delivery, if applicable, shall be deducted at the time of first payment. If penalty is applicable for duration of less than a week, penalty @ 0.5% (half percent) of the basic material value will be deducted.

8. **Contract variations (Increase or decrease in the scope of supply):** BHEL may vary the contracted scope as per requirements at site. If vendor is of the opinion that the variation has an effect on the agreed price or delivery period, BHEL shall be informed of this immediately in writing along with technical details. Where unit rates are available in the Contract, the same shall be applied to such additional work. Vendor shall not perform additional work before BHEL has issued written instructions / amendment to the Purchase Order to that effect. The work which the vendor should have or could have anticipated in terms of delivering the service(s) and functionality (i.e.) as described in this agreement, or which is considered to be the result of an attributable error on the vendor's part, shall not be considered additional work.
9. **Reverse Auction:** BHEL reserves the right to go for Reverse Auction (RA) (Guidelines as available on www.bhel.com) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. Bidders to give their acceptance with the offer for participation in RA. Non-acceptance to participate in RA may result in non- consideration of their bids, in case BHEL decides to go for RA.

Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit 'Process compliance form' (to the designated service provider) as well as 'Online sealed bid' in the Reverse Auction. Non-submission of 'Process compliance form' or 'Online sealed bid' by the agreed bidder(s) will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com).

The bidders have to necessarily submit online sealed bid less than or equal to their envelope sealed price bid already submitted to BHEL along with the offer. The envelope sealed price bid of successful L1 bidder in RA, if conducted, shall also be opened after RA and the order will be placed on lower of the two bids (RA closing price & envelope sealed price) thus obtained. The bidder having submitted this offer specifically agrees to this condition and undertakes to execute the contract on thus awarded rates.

If it is found that L1 bidder has quoted higher in online sealed bid in comparison to envelope sealed bid for any item(s), the bidder will be issued a warning letter to this effect. However, if the same bidder again defaults on this count in any subsequent tender in the unit, it will be considered as fraud and will invite

action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com).

10. **Pre Shipment Inspection:** Prior written notice of at least one week shall be given along with internal test certificates / COC and applicable test certificates. Materials will be inspected by BHEL-EDN-QS/CQS or BHEL nominated Third Party Inspection Agency (TPIA) or BHEL authorized Inspection Agency or Customer / Consultant or jointly by BHEL & Customer / consultant. All tests have to be conducted as applicable in line with approved Quality plan or QA Checklist or Purchase specification and original reports shall be furnished to BHEL-EDN, Bangalore for verification / acceptance for issue of dispatch clearance.
All costs related to inspections & re-inspections shall be borne by vendor. Whether the Contract provides for tests on the premises of the vendor or any of his Sub-contractor/s, vendor shall be responsible to provide such assistance, labour, materials, electricity, fuels, stores, apparatus, instruments as may be required and as may be reasonably demanded to carry out such tests efficiently. Cost of any type test or such other special tests shall be borne by BHEL only if specifically agreed to in the purchase order.
11. **Transit Insurance:** Transit insurance coverage between vendor's works and project site shall be to the account of BHEL, unless specifically agreed otherwise. However, vendor shall send intimation directly to insurance agency through fax/courier/e-mail, immediately on dispatch of goods for covering insurance. A copy of such intimation sent by vendor to insurance agency shall be given to BHEL along with dispatch documents. Dispatch documents will be treated as incomplete without such intimation copy. BHEL shall not be responsible for sending intimations to insurance agency on behalf of the vendor.
12. **Packaging and dispatch:** The Seller shall package the goods safely and carefully and pack them suitably in all respects considering the peculiarity of the material for normal safe transport by Sea / Air / Rail / Road to its destination suitably protected against loss, damage, corrosion in transit and the effect of tropical salt laden atmosphere. The packages shall be provided with fixtures / hooks and sling marks as may be required for easy and safe handling. If any consignment needs special handling instruction, the same shall be clearly marked with standard symbols / instructions. Hazardous material should be notified as such and their packing, transportation and other protection must conform to relevant regulations.
The packing, shipping, storage and processing of the goods must comply with the prevailing legislation and regulations concerning safety, the environment and working conditions. Any Imported/Physical Exports items packed with raw / solid wood packing material should be treated as per ISPM – 15 (fumigation) and accompanied by Phytosanitary / Fumigation certificate. If safety information sheets (MSDS – Material Safety Data Sheet) exist for an item or the packaging, vendor must provide this information without fail along with the consignment.
Each package must be marked with Consignee name, Purchase order number, Package number, Gross weight and net weight, dimensions (L x B x H) and Seller's name. Packing list of goods inside each package with PO item number and quantity must also be fixed securely outside the box to indicate the contents of each box. Total number of packages in the consignment must also be indicated.
Separate packing & identification of items should be as follows.
 1. Main Scope - All items must be tagged with part no. & item description.
 2. Commissioning spares - All items must be tagged with part no. & item description.
 3. Mandatory spares - All items must be tagged with part no. & item description.
13. **Assignment of Rights & Obligations; Subcontracting:** Vendor is not permitted to subcontract the delivery or any part thereof to third party or to assign the rights and obligations resulting from this agreement in whole or in part to third parties without prior written permission from BHEL. Any permission or approval given by the BHEL shall, however, not absolve the vendor of the responsibility of his obligations under the Contract.
14. **Progress report:** Vendor shall render such report as to the progress of work and in such form as may be called for by the concerned purchase officer from time to time. The submission and acceptance of such reports shall not prejudice the rights of BHEL in any manner.
15. **Non-disclosure and Information Obligations: Vendor** shall provide with all necessary information pertaining to the goods as it could be of importance to BHEL. Vendor shall not reveal confidential information that may be divulged by BHEL to Vendor's employees not involved with the tender/ contract &

its execution and delivery or to third parties, unless BHEL has agreed to this in writing beforehand. Vendor shall not be entitled to use the BHEL name in advertisements and other commercial publications without prior written permission from BHEL.

16. **Cancellation / Termination of contract:** BHEL shall have the right to completely or partially terminate the agreement by means of written notice to that effect. Termination of the Contract, for whatever reason, shall be without prejudice to the rights of the parties accrued under the Contract up to the time of termination.
BHEL shall have the right to cancel/foreclose the Order/ Contract, wholly or in part, in case it is constrained to do so, on account of any decline, diminution, curtailment or stoppage of the business.
17. **Risk Purchase Clause:** In case of failure of supplier, BHEL at its discretion may make purchase of the materials / services NOT supplied / rendered in time at the RISK & COST of the supplier. Under such situation, the supplier who fails to supply the goods in time shall be wholly liable to make good to BHEL any loss due to risk purchase.
In case of items demanding services at site like erection and commissioning, vendor should send his servicemen /representatives within 7 days from the service call. In case a vendor fails to attend to the service call, BHEL at its discretion may also make arrangements to attend such service by other parties at the **RISK & COST** of the supplier. Under such situation the supplier who fails to attend the service shall be wholly liable to make good to BHEL any loss due to risk purchase / service including additional handling charges due to the change.
18. **Shortages:** In the event of shortage on receipt of goods and/or on opening of packages at site, all such shortages shall be made good within a reasonable time that BHEL may allow from such intimation and free of cost.
Transit Damages: In the event of receipt of goods in damaged condition or having found them so upon opening of packages at site, Supplier shall make good of all such damages within a reasonable time from such intimation by BHEL.
19. **Remedial work:** Notwithstanding any previous test or certification, BHEL may instruct the vendor to remove and replace materials/goods or remove and re-execute works/services which are not in accordance with the purchase order. Similarly BHEL may ask the vendor to supply materials or to execute any services which are urgently required for any safety reasons, whether arising out of or because of an accident, unforeseeable event or otherwise. In such an event, Vendor shall provide such services within a reasonable time as specified by BHEL.
20. **Indemnity Clause:** Vendor shall comply with all applicable safety regulations and take care for the safety of all persons involved. Vendor is fully responsible for the safety of its personnel or that of his subcontractor's men / property, during execution of the Purchase Order and related services. All statutory payments including PF, ESI or other related charges have to be borne by the vendor. Vendor is fully responsible for ensuring that all legal compliances are followed in course of such employment.
21. **Product Information, Drawings and Documents:** Drawings, technical documents or other technical information received by Vendor from BHEL or vice versa shall not, without the consent of the other party, be used for any other purpose than that for which they were provided. They may not, without the consent of the Disclosing party, otherwise be used or copied, reproduced, transmitted or communicated to third parties. All information and data contained in general product documentation, whether in electronic or any other form, are binding only to the extent that they are by reference expressly included in the contract.
Vendor, as per agreed date/s but not later than the date of delivery, provide free of charge information and drawings which are necessary to permit and enable BHEL to erect, commission, operate and maintain the product. Such information and drawings shall be supplied in as many numbers of copies as may be agreed upon.
All intellectual properties, including designs, drawings and product information etc. exchanged during the formation and execution of the Contract shall continue to be the property of the disclosing party.
22. **Intellectual Property Rights, Licenses:** If any Patent, design, Trade mark or any other intellectual property rights apply to the delivery (goods / related service) or accompanying documentation shall be the exclusive

property of the Vendor and BHEL shall be entitled to the legal use thereof free of charge by means of a non-exclusive, worldwide, perpetual license. All intellectual property rights that arise during the execution of the Purchase Order/ contract for delivery by vendor and/or by its employees or third parties involved by the vendor for performance of the agreement shall belong to BHEL. Vendor shall perform everything necessary to obtain or establish the above mentioned rights. The Vendor guarantees that the delivery does not infringe on any of the intellectual property rights of third parties. The Vendor shall do everything necessary to obtain or establish the alternate acceptable arrangement pending resolution of any (alleged) claims by third parties. The Vendor shall indemnify BHEL against any (alleged) claims by third parties in this regard and shall reimburse BHEL for any damages suffered as a result thereof.

23. **Force Majeure:** Notwithstanding anything contained in the purchase order or any other document relevant thereto, neither party shall be liable for any failure or delay in performance to the extent said failures or delays are caused by the "Act of God" and occurring without its fault or negligence, provided that, force majeure will apply only if the failure to perform could not be avoided by the exercise of due care and vendor doing everything reasonably possible to resume its performance.

A party affected by an event of force majeure which may include fire, tempest, floods, earthquake, riot, war, damage by aircraft etc., shall give the other party written notice, with full details as soon as possible and in any event not later than seven (7) calendar days of the occurrence of the cause relied upon. If force majeure applies, dates by which performance obligations are scheduled to be met will be extended for a period of time equal to the time lost due to any delay so caused.

Notwithstanding above provisions, in an event of Force Majeure, BHEL reserves for itself the right to cancel the order/ contract, wholly or partly, in order to meet the overall project schedule and make alternative arrangements for completion of deliveries and other schedules.

24. **Guarantee / Warranty:** Wherever required, and so provided in the specifications / Purchaser Order, the Seller shall guarantee that the stores supplied shall comply with the specifications laid down, for materials, workmanship and performance. The guarantee / warranty period as described shall apply afresh to replaced, repaired or re-executed parts of a delivery. If the vendor fails to take proper corrective action to repair/replace defects satisfactorily within a reasonable period, Purchaser shall be free to take corrective action as may be deemed necessary at vendor's risk and cost after giving notice to the vendor, including arranging supply of goods from elsewhere at the sole risk and cost of the vendor. Unless otherwise specifically provided in the Purchase Order, Vendor's liability shall be co terminus with the expiration of the applicable guarantee / warranty period.

25. **Limitation of Liability:** Vendor's liability towards this contract is limited to a maximum of 100% of the contract value and consequential damages are excluded. However the limits of liability will have no effect in cases of criminal negligence or wilful misconduct.

The total liability of Vendor for all claims arising out of or relating to the performance or breach of the Contract or use of any Products or Services or any order shall not exceed the total Contract price.

26. **Liability during guarantee / warranty:** Vendor shall arrange replacement / repair of all the defective materials / services under its obligation under the guarantee / warranty period. The rejected goods shall be taken away by vendor and replaced / repaired. In the event of the vendor's failure to comply, BHEL may take appropriate action including disposal of rejections and replenishment by any other sources at the cost and risk of the vendor.

In case, defects attributable to vendor are detected during first time commissioning or use, vendor shall be responsible for replacement / repair of the goods as required by BHEL at vendor's cost. In all such cases expiry of guarantee / warranty will not be applicable.

27. **Liability after guarantee / warranty period:** At the end of the guarantee / warranty, the Vendor's liability ceases except for latent defects (latent defects are defects / performance issues noticed after the guarantee / warranty has expired). The Contractor's liability for latent defects warranty for the plant and equipment including spares shall be limited to a period of six months from the end of the guarantee / as specified in RFQ.

28. **Compliance with Laws:** Vendor shall, in performing the contract, comply with all applicable laws. The vendor shall make all remittances, give all notices, pay all taxes, duties and fees, and obtain all permits, licences and approvals, as required by the laws in relation to the execution and completion of the contract and for remedying of any defects; and the Contractor shall indemnify and hold BHEL harmless against and from the consequences of any failure to do so.
29. **Settlement of Disputes:** Except as otherwise specifically provided in the Purchase Order, decision of BHEL shall be binding on the vendor with respect to all questions relating to the interpretation or meaning of the terms and conditions and instructions herein before mentioned and as to the completion of supplies/work/services, other questions, claim, right, matter or things whatsoever in any way arising out of or relating to the contract, instructions, orders or these conditions or otherwise concerning the supply or the execution or failure to execute the order, whether arising during the schedule of supply/work or after the completion or abandonment thereof. Any disputes or differences among the parties shall to the extent possible be settled amicably between the parties thereto, failing which the disputed issues shall be settled through arbitration. Vendor shall continue to perform the contract, pending settlement of dispute(s).
30. **Arbitration Clause:** In case amicable settlement is not reached in the event of any dispute or difference arising out of the execution of the Contract or the respective rights and liabilities of the parties or in relation to interpretation of any provision in any manner touching upon the Contract, such dispute or difference shall (except as to any matters, the decision of which is specifically provided for therein) be referred by either party to the sole arbitration of an Arbitrator appointed by the Executive Director/ General Manager of the purchasing unit/ region/ division of BHEL. Vendor shall have no objection even if the Arbitrator so appointed is an employee of BHEL or has ever dealt/ had to deal with any matter relating to this Contract. Subject as aforesaid the provisions of the Arbitration and Conciliation Act, 1996 of India or any statutory modification or re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceedings under this clause. It is a term of contract that the party initiating arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute. The venue for the arbitration shall be Bangalore, India. The award of the arbitrator shall be a speaking award and shall be final, conclusive and binding on all parties to this contract.
The cost of arbitration shall be borne equally by the parties. Notwithstanding the existence of any dispute or difference or any reference for the arbitration, the vendor shall proceed with and continue without hindrance the performance of the work under the contract with due diligence and expedition in a professional manner.
31. **Applicable Laws and Jurisdiction of Courts:** Prevailing Indian laws both substantive and procedural, including modifications thereto, shall govern the Contract. Subject to the conditions as aforesaid, the competent courts in BANGALORE alone shall have jurisdiction to consider over any matters touching upon this contract.
32. **General Terms:** That any non-exercise, forbearance or omission of any of the powers conferred on BHEL and /or any of its authorities will not in any manner constitute waiver of the conditions hereto contained in these presents.
That the headings used in this agreement are for convenience of reference only.
That all notices etc., to be given under the Purchase order shall be in writing, type script or printed and if sent by registered post or by courier service to the address given in this document shall be deemed to have been served on the date when in the ordinary course, they would have been delivered to the addressee.

ANNEXURE - I
LIST OF INTERNATIONAL GATEWAY AIRPORTS

SCHEDULE NO	COUNTRY	CURRENCY CODE	AIRPORT
D01	UK	GBP	LONDON (HEATHROW)
D02	UK	GBP	NEW CASTLE
D03	UK	GBP	OXFORD. CHETLAM
D04	UK	GBP	BRISTOL. WELLINGBOROUGH
D05	UK	GBP	BIRMINGHAM
D06	UK	GBP	EAST MIDLANDS
D07	UK	GBP	MANCHESTER
D08	UK	GBP	LEEDS
D09	UK	GBP	GLASGOW
D10	FRANCE	EURO	PARIS (ROISSY) & LYON
D11	SWEDEN	EURO	STOCKHOLM
D12	SWEDEN	EURO	GOTHENBERG & MALMO
D13	ITALY	EURO	ROMA, MILAN
D14	ITALY	EURO	TURIN, BOLOGNA, FLORENCE
D15	NETHERLANDS	EURO	AMSTERDAM, ROTTERDAM
D16	AUSTRIA	EURO	VIENNA, LINZ, GRAZ
D17	BELGIUM	EURO	ANTWERP, BRUSSELS
D18	DENMARK	DKK	COPENHAGEN
D19	JAPAN	JPY	TOKYO, OSAKA
D20	SINGAPORE	SGD	SINGAPORE
D21	CANADA	CAD	TORONTO
D22	CANADA	CAD	MONTREAL
D23	USA	USD	NEW YORK, BOSTON
D24	USA	USD	CHICAGO
D25	USA	USD	SAN FRANCISCO, LOS ANGELES
D26	USA	USD	ALANTA, HOUSTON
D27	GERMANY	EURO	MUNICH, KOLN, DUSSELDORF, HANNOVER, HAMBURG, STUTTGART, DAMSTADT, MANIHIEM, NURUMBERG
D28	GERMANY	EURO	FRANKFURT
D29	GERMANY	EURO	BERLIN
D30	SWITZERLAND	SFR	BASLE, ZURICH, GENEVA
D31	SPAIN	EURO	BARCELONA
D32	AUSTRALIA	AUD	SYDNEY
D33	AUSTRALIA	AUD	MELBOURNE
D34	AUSTRALIA	AUD	PERTH
D35	CZECH	EURO	PRAGUE
D36	HONG KONG	HKD	HONG KONG
D37	NEW ZELAND	NZD	AUCKLAND
D38	RUSSIA	USD	MOSCOW
D39	SOUTH KOREA	USD	KIMPO INTERNATIONAL, INCHEON
D40	FINLAND	EURO	HELSINKI
D41	ROMANIA	EURO	BUCHAREST
D42	NORWAY	EURO	OSLO
D43	IRELAND	EURO	DUBLIN
D44	ISRAEL	USD	TEL AVIV
D45	UAE	USD	DUBAI
D46	OMAN	USD	MUSCAT
D47	EGYPT	USD	CAIRO
D48	TAIWAN	USD	TAIPEI
D49	UKRAINE	USD	KIEV
D50	CHINA	USD	SHANGHAI, SHENZHEN
D51	PHILIPINES	USD	MANILA
D52	MALAYSIA	USD	KUALALUMPUR, PE NANG
D53	CYPRUS	USD	LARNACA
D54	SOUTH AFRICA	USD	JOHANNESBERG, DURBAN
D55	SLOVAKIA	EURO	BARTISLOVA
D56	SAUDI ARABIA	SAR	RIYADH
D57	TURKEY	EURO	ISTANBUL
D58	THAILAND	USD	BANGKOK
D59	BRAZIL	USD	SAO PAULO, RIO DE JANEIRO

ANNEXURE - II
REQUEST FOR C FORM

NAME OF VENDOR :

VENDOR CODE ALLOTTED BY BHEL :

E mail id for c form correspondence :

BHEL PO NO	INVOICE NO	INVOICE DATE	INVOICE AMOUNT	SUPPLY FROM - STATE	SUPPLY TO - STATE	CST TIN NUMBER (SUPPLIER)	INVOICE AMOUNT EXCLUDING FREIGHT	C FORM QTR	YEAR	SUPPLY TO BHEL EDN / SITE
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Please note that one 'C' form will be issued for a quarter.

Any modification and cancellation of c form is not possible from our end since it is generated online therefore include all invoices pertaining to quarter in your request
Also check the data are correct in all respect

General Instruction:

1. C form request should be given only in this file.
2. Amount should be 100% of Invoice value but should Not include freight, Insurance etc.
3. PO No. should be numeric, starting with 4 and has 10 digits
4. For every quarter separate file to be provided
5. All Invoices pertaining to the relevant quarter to be included.
6. No corrections will be entertained once c-form is issued.

ANNEXURE-III

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of the Bharat Heavy Electricals Limited ¹ (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____ through its Unit at.....(name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) having its registered office at _____ ² hereinafter referred to as the 'Contractor/Supplier', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated³ valued at Rs.....⁴ (Rupees -----)/FC.....(in words.....) for⁵ (hereinafter called the 'Contract') and the Contractor having agreed to provide a Contract Performance Guarantee, equivalent to% (.... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we,, (hereinafter referred to as the Bank), having registered/Head office at and inter alia a branch at being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer a maximum amount Rs ----- (Rupees -----) without any demur, immediately on a demand from the Employer, .

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor/ Supplier in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the contractors/supplier shall have no claim against us for making such payment.

We thebank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Contractor/Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Contractor/Supplier and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor/Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Contractor/Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the Employer may have in relation to the Contractor's liabilities.

This Guarantee shall remain in force upto and including.....⁶ and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Contractor/Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the⁷ we shall be discharged from all liabilities under this guarantee thereafter.

We, BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed.....⁸
- b) This Guarantee shall be valid up to⁹
- c) Unless the Bank is served a written claim or demand on or before _____¹⁰ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated.....

Place of Issue.....

¹ NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited

² NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ PROJECT/SUPPLY DETAILS

⁵ BG AMOUNT IN FIGURES AND WORDS

⁶ VALIDITY DATE

⁷ DATE OF EXPIRY OF CLAIM PERIOD

⁸ BG AMOUNT IN FIGURES AND WORDS.

⁹ VALIDITY DATE

¹⁰ DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. In Case of Bank Guarantees submitted by Foreign Vendors-

- a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
- b. **From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
 - b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank (BHEL's Consortium Bank). It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b.2 **In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank** (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
 - b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). In case, of Foreign Vendors, the BG Format provided to them should clearly specify the same.
 - b.4 The BG should clearly specify that the demand or other document can be presented in electronic form.

ANNEXURE - IV

Electronic Funds Transfer (EFT) OR Paylink Direct Credit Form

Please Fill up the form in **CAPITAL LETTERS** only.

TYPE OF REQUEST(Tick one): _____ CREATE _____ CHANGE

BHEL Vendor / Supplier Code:	
Company Name :	
Permanent Account Number(PAN):	
Address	

City: _____	PINCODE _____	STATE _____
-------------	---------------	-------------

Contact Person(s)	
Telephone No:	
Fax No:	
e-mail id:	

1 Bank Name:	
2 Bank Address:	
3 Bank Telephone No:	
4 Bank Account No:	
5 Account Type: Savings/Cash Credit	
6 9 Digit Code Number of Bank and branch appearing on MICR cheque issued by Bank	
7 Bank swift Code(applicable for EFT only)	
8 Bank IFSC code(applicable for RTGS)	
9 Bank IFSC code(applicable for NEFT)	

- A I hereby certify that the particulars given above are true, correct and complete and that I, as a representative for the above named Company, hereby authorise BHEL, EDN, Bangalore to electronically deposit payments to the designated bank account.
- B If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information, I would not hold BHEL / transferring Bank responsible.
- C This authority remains in full force until BHEL, EDN, Bangalore receives written notification requesting a change or cancellation.
- D I have read the contents of the covering letter and agree to discharge the responsibility expected of me as a participant under ECS / EFT.

Date:

Authorised Signatory:

Designation:

Telephone NO. with STD Code

Company Seal

Bank Certificate

We certify that _____ has an Account No _____ with us and we confirm that the bank details given above are correct as per our records.

Date: _____ (.....)

Place: _____ Signature

Please return completed form along with a blank cancelled cheque or photocopy thereof to:

Bharath Heavy Electricals Ltd,

Attn:

Electronics Division, Mysore Road,

BANGALORE - 560 026

In case of any Query, please call : 080-26998xxx / 2674xxxx or fax no. 080-2674xxxx

ANNEXURE-V
BHEL MEMBER BANKS (LIST OF CONSORTIUM BANKS)

BANK GUARANTEE (BG) SHALL BE ISSUED FROM THE FOLLOWING BANKS ONLY:

	Nationalised Banks		Nationalised Banks
1	Allahabad Bank	19	Vijaya Bank
2	Andhra Bank		Public Sector Banks
3	Bank of Baroda	20	IDBI
4	Canara Bank		Foreign Banks
5	Corporation Bank	21	CITI Bank N.A
6	Central Bank	22	Deutsche Bank AG
7	Indian Bank	23	The Hongkong and Shanghai Banking Corporation Ltd. (HSBC)
8	Indian Overseas Bank	24	Standard Chartered Bank
9	Oriental Bank of Commerce		
10	Punjab National Bank	26	J P Morgan
11	Punjab & Sindh Bank		Private Banks
12	State Bank of India	27	Axis Bank
13	State Bank of Hyderabad	28	The Federal Bank Limited
14	Syndicate Bank	29	HDFC Bank
15	State Bank of Travancore	30	Kotak Mahindra Bank Ltd
16	UCO Bank	31	ICICI Bank
17	Union Bank of India	32	IndusInd Bank
18	United Bank of India	33	Yes Bank

Note:

- All BGs must be issued from BHEL consortium banks listed above.
- BHEL may accept BG from other Nationalised Banks also which are not listed above.
- BG will not be accepted from Scheduled Banks and Co-operative Banks.
- In case BG is issued from a bank located outside Indian territory and is issued in foreign currency, the BG must be routed through and confirmed by any one of the above mentioned consortium banks or any of the Indian Public Sector Banks.
- This list is subject to changes. Hence vendors are requested to check this list every time before issuing BGs.

ANNEXURE - VI

DISCREPANCY IN WORDS & FIGURES – QUOTED IN PRICE BID

Following guidelines will be followed in case of discrepancy in words & figures-quoted in price bid:

- (a) If, in the price structure quoted for the required goods/services/works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.
- (b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
- (c) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.
- (d) If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date upto which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored.

ANNEXURE - VII

BENEFITS FOR MSE SUPPLIERS AS PER MSMED ACT 2006 AND PUBLIC PROCUREMENT POLICY 2012

MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of Acknowledgement in EM II).

Or

Valid NSIC certificate or EM II certificate along with attested copy of CA certificate (Format enclosed: ANNEXURE VIII) where deemed validity of EM II certificate of five years has expired) applicable for the relevant financial year (latest audited).

Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid).

Non-submission of such documents will lead to consideration of their bid at par with other bidders.

No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazette officer.

ANNEXURE - VIII
CERTIFICATE BY CHARTERED ACCOUNTANT ON LETTER HEAD

This is to certify that M/s
.....(Hereinafter referred to as 'Company') having
its registered office at is registered under MSMED Act 2006, (Entrepreneur
Memorandum No ((Part-II) dtd Category:
(Micro/Small). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the
latest audited financial year **as per MSMED Act 2006 is as follows:**

1. For Manufacturing Enterprises: Investment in plant and machinery (i.e., original cost excluding land
and building and the items specified by the Ministry of Small Industries vide its notification No.S.O.1722
(E) dated October 5, 2006:

Rs.Lacs.

2. For Service Enterprises: Investment in equipment (original cost excluding land and building
and furniture, fittings and other items not directly related to the service rendered or as may be
notified under the MSMED Act, 2006:

Rs.Lacs.

The above investment of Rs. Lacs in within permissible limit of Rs..... Lacs
for.....Micro / Small (Strike off which is not applicable) Category under MSMED
Act 2006.

(or)

The company has been graduated from its original category (Micro/Small) (Strike off which is not
applicable) and the date of graduation of such enterprise from its original category is
.....(dd/mm/yy) which is within the period of 3 years from the date of graduation of such enterprise
from its original category as notified vide S.O.No.3322(E) dated 01.11.2013 published in the gazette
notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

Name -

Membership Number -

Seal of Chartered Accountant

ANNEXURE - IX

In case of intrastate movement i.e. supply within same state and VAT is applicable, the vendor shall furnish the respective BHEL™s nodal agency TIN no. and address in their invoice.

List of Statewise Nodal Officers with Contact Details

Region	State	Nodal Unit responsible for all other units except those in column 4	Contact Details- Landline No.	E-mail	TIN No.	CST No.
1	2	3		7	8	9
Norther States	Jammu & Kashmir	PSNR	0120-2510488/2416452	rahulb@bhelspsnr.co.in / a.chadha@bhelspsnr.co.in	01291101313	
	Himachal Pradesh	PSNR			02011000622	
	Punjab	PSNR			03451148722	
	Haryana	PSNR			06962606884	
	Rajasthan	PSNR			08232903345	
	Uttar Pradesh	PSNR	0120-2416536	rahulb@bhelspsnr.co.in / smittal@bhelspsnr.co.in	09365800914	
	Uttarakhand	Hardwar	01334-285449	alok@bhelhwr.co.in	05001757277 Dated 30th Sep 2005	5000030 Dated 13/03/1965
	Delhi	TBG	0120-6748429	skjindal@bhel.in	07472001760	07472001760
Western States	Madhya Pradesh	Bhopal	0755-2503231	meeta@bhelbpl.co.in	23573600001 (HEL/05/01/0001/S dated 15/11/1979 under MPCT)	HEL/05/01/0004/C dated 15/11/1979
	Chattisgarh	PSWR	0712-3048609	mgupta@bhelspswr.co.in	22173202974	
	Gujarat	PSWR	0265-2370321	bhavin@bhelspswr.co.in	24190101571	
	Maharashtra	ROD Mumbai	022-22126061/22187850	mahajani@bhel.in	27060300130V	27060300130C
	Daman & Diu	EDN	080-26998724 / 26998830	theerthagiri@bheledn.co.in	25000009902	
Southern States	Orissa	PSSR	044-28286773	sparida@bhelspsr.co.in . lakshmi@bhelspsr.co.in	21031301916	
	Tamil Nadu	Trichy	0431-2577757/ 2577229	msrao@bheltry.co.in / bharaths@bheltry.co.in	33243560005	239383 dt.11.6.91
	Kerala	PSSR	044-28286773	lakshmi@bhelspsr.co.in	32072043622	
	Karnataka	EDN	080-26998724 / 26998830	theerthagiri@bheledn.co.in	29180069268	00850081
	Telangana	HPEP RC, Puram	040-23185406/ 040-23182238	chand@bhelhyd.co.in / sbsv@bhelhyd.co.in	36360151179	
	Andhra Pradesh	HPVP, Vizag	0891-6681298	sarmaass@bhpvl.com	37418632431	
	Puducherry	PSSR				
Eastern States	West Bengal	PSER	033-23216130-3238	amitavac@bhelpser.co.in	19200936019	19200936213
	Bihar	PSER	0612-2231275	rakesh@bhelpser.co.in	10010994046	10010994046
	Jharkhand	PSER	06549-266351(Sh. Parmanand Swaroop)/06534-292179 (Sh. K.K. Ajeet)	pswaroop@bhelpser.co.in (Bokaro) kk.ajit@bhelpser.co.in (Koderma/Abhijeet/North Karanpura) manishk.jain@bhelpser.co.in (Chandrapura)/ kpsubbu@bhelpser.co.in	20352205642 (Bokaro) 20082005255 (Maithon) 20512405410 (Koderma) 20122200394 (Chandrapura) 20620905730(Adhunik) 20650507026(Abhijeet) 20452110016 (North Karanpura)	TG-729(C)
	Mizoram	PSER	033-23216130-3249	anindya@bhelpser.co.in	15501465017	
	Arunachal Pradesh	PSER	033-23216130-3249	anindya@bhelpser.co.in	12020122182	Not Applied
	Assam	PSER	033-23216130-3249	anindya@bhelpser.co.in	18790101415	18179903204
	Tripura	PSER	03821-265209	mkmahato@bhelpser.co.in	16060947071	16060947273
	Sikkim	PSER				
	Meghalaya	PSER				
	Manipur	PSER				
	Nagaland	PSER				