Bharat Heavy Electricals Ltd.,

(A Government of India undertaking)

Solar Business Division

Prof CNR Rao Circle, Opp. IISC, Malleswaram, Bangalore-560012, India

E-TENDER

Quotations are invited under two-part bid system (open tender) for Supply and Commissioning Support of Solar Compact Station (SCS) for 8 MWac Solar PV Farm at Tamarind Falls, Henrietta, Mauritius through e-procurement route.

The Tender shall be procured through e-procurement route. Kindly refer Website **https://eprocurebhel.co.in/nicgep/app/** for details.

RFQ NO and date	RAJBOS0075 dated 14.06.2021 (E-tender)
RFQ due date & time	25.06.2021 up to 13.00 hrs (IST)
Date, Time & Venue of Part-I Bid Opening	25.06.2021 after 13.30 hrs (IST) (E-tender) – Website - **https://eprocurebhel.co.in/nicgep/app/**
Date, Time & Venue of Price Bid opening	Will be intimated later for technically accepted vendors
Address for Communication & Contact Person in BHEL	Mr. Rajesh S (09845634534)/ Mr. Vivek Yadav (09449039232), Email: s.rajesh@bhel.in vivekyadav@bhel.in **Engineering Department**: Mr. PVV RAVI KISHORE (7676492191) BHEL SBD, Malleswaram, opp IISC Bangalore-560 012. INDIA

Note:

1) This is not a Global Tender. Latest GOI guidelines w.r.t Make in India, MSEs, Local Suppliers, Contracts valued less than Rs.200 Crore shall be applicable to this tender. Currency of tendering is INR. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.
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.

Pre-Qualification Criteria for RFQ No. RAJBOS0075

BHEL-SBD is floating an open tender for Solar Compact Station (SCS) for 8MWac Solar PV Farm at Tamarind Falls, Mauritius. Quantity of items apart from spares, commissioning support is as follows:

Sl.No.	Item Description	Qty
1	Supply of SCS	4 Sets

Pre-Qualification Criteria (PQC) :

1. Vendor shall be an Original Equipment Manufacturer (OEM) of inverter or inverter transformer or MV switchgear. Vendor shall submit the product catalogue as an evidence.

2. SCS Country of origin shall be India. Vendor shall submit a declaration that the manufacturing works of the container (where the proposed inverter, inverter transformer and MV switchgear along with the associated LT Panels and other auxiliary equipment shall be assembled) shall be in India.

3. Vendor should have supplied and commissioned similar containerized or skid or outdoor integrated solution including PCU of minimum 500 kW rating, inverter transformer and MV switchgear of 6.6 kV & above rating to any Solar PV project. PO & Commissioning certificate of the integrated solution from customer or EPC company shall be submitted as evidence.

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Technical specification

for

Supply, installation and commissioning of

Solar Compact Station (SCS)

R00	Approved: PRACHI RAO V	
	Prepared PVV RAVI KISHORE V	Date 03/06/2021

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INTRODUCTION:

This technical specification provides required details for supply of Solar Compact Station (SCS). The solar compact station (SCS) shall be of containerized type and shall enclose the low voltage DC-distribution, the inverter modules, the low voltage AC distribution, the medium voltage step up dry type transformers, the medium voltage switchgear, the control and monitoring system, auxiliary supply, ventilation system, back-up power supply. The scope also includes commissioning of the supplied units at the project site for synchronizing the generated ac power to 22kV grid on HV side.

The solar compact station container shall be protected against corrosion and shall be protected against the extreme weather conditions of Mauritius to ensure durability. Mauritius has a tropical oceanic climate with moderately high temperatures and humidity throughout the year. Rain occurs in all months but the wettest periods is from December to April. During these months tropical cyclones occasionally strike the island or pass near enough to give very heavy rainfall and violent damaging winds in the range of 270 -300km/h. Outside the main rainy season the weather is generally sunny and pleasant with slightly lower temperatures and a strong sea breeze.

The temperature ranges between 12^0C to 38^0C and a relative humidity above 95%. There is no history of seismic activity in the area.

1.0 Scope of supply

SL No	Item Description	Quantity
a)	Supply of SCS as per the SLD BHEL-CEB-ELE-001. Containerized Central inverter suitable for outdoor installation. DC Voltage Rating of up to 1500V Power output rating of each inverter: 1 MW Number of inverters in each SCS: 2 The name plate rating shall be the output rating at 50^oC Dry type inverter transformer: 2 MVA 22 kV MV Switchgear: 1 set The detailed specification of the complete requirement is given in Clause 4.0	4 Sets
b)	**Supply of Spares** for SCS. List of items with quantity is as follows: 1) Inverter modules Quantity = 25% of total installed capacity 2) Fuses Quantity = 50 nos. of each type and rating 3) DC Disconnect (Load Break Switch) of each rating – 20 Nos. 4) Surge Protection Device Quantity = 20 nos. of each type and rating	1 set

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	5) AC Circuit Breakers Quantity = 10 nos. of each type and rating 6) Dry type inverter transformer – 1 No., 7) Dry type Auxiliary transformer – 1 No., 8) LED light fittings complete with LED Driver - 10% of total installed quantity 9) Control Cards for Inverter Quantity = 1 set of each type **Notes:** **(a) The above spare quantities are the mandatory spares to be handed over to customer, over and above the warranty requirements.** **(b) Item-wise BOQ and break-up prices shall be provided in the offer. Wherever % indicated, total quantity used in main equipment to be specified by the vendor.** **(c) Control cards of inverter refers to all the electronics cards used in the inverter including main microprocessor cards, protection cards, I/O cards, gate driver cards and any other PCB used in the inverter not specifically indicated above.**	
c)	Commissioning support of SCS along with Training BHEL scope of activities at site for installation and commissioning: (1) Movement and positioning of SCS containers at the earmarked position on the outdoor RCC pedestals. (2) Connecting the incoming (DC side) and outgoing (AC side) cables of RMUs shall be done by BHEL. This DC cable and AC cable at the RMU outgoing shall be BHEL supply. The cable lugs, glands and termination kits for the DC cable and AC cable shall be provided by vendor. Vendor scope of activities at site for commissioning: (1) Connecting at the respective termination ends (as required) of the inverters (AC side), transformers, RMU panels using the cable/bus bar, cable glands and fastening hardware (nuts, bolts, washers etc.,) provided by the vendor. (2) All the electrical checks that are required to confirm that solar DC parameters (current, voltage) are available at the DC input side of inverters. (3) Service engineers shall be present at site during installation and commissioning of SCS, providing all necessary guidance and support to achieve successful synchronization of inverter output with grid and also to trouble-shoot / resolve the technical problems associated with SCS. MV	4 AU

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switchgear testing shall include but not limited to those detailed in IEC 62271-200 Clause 7. Commissioning / Service Engineer shall be from OEM/ OEM authorized partners.

(4) Installation and commissioning support to BHEL team for commissioning of SCADA & PPC, in respect of connection of communication cables to SCS and technical problems related to receiving data signals at SCADA station from SCS.

(5) Training: Vendor shall provide training at site to BHEL and customer's 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.
Training on inverter programming and troubleshooting, transformer & 22 kV switchgear testing and commissioning, safety measures at the manufacturer's work place shall be provided to three (3) customer's technical staffs. The training shall include classroom lectures and hands-on training.

Note: Supply and installation of integrated SCADA system for the overall power plant is within BHEL scope.

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.

2.0 Warranty

Any defects reported during the warranty period shall be remedied by the vendor within an agreed time frame between both parties. Vendor scope includes any visit of their service representative as required, for repair/replacement of failed items and re-commissioning of the SCS equipment. Vendor shall set-up or make provision of after sales service and required spare parts for this project. Warranty support also includes software upgradations, as required and statutory compliances.

3.0 Technical Documents to be submitted along with offer

1. Vendor shall provide nil deviation letter as a confirmation to BHEL specification.

In case of any clarifications needed in this specification, the same needs to be communicated in writing at least five days earlier to the technical bid opening date.

2. Product datasheet of the offered inverter, transformer, RMU.
3. Overall General Arrangement of inverter, transformer, RMU & all other SCS equipment indicating dimensions, weight and cable cut outs/termination arrangement.
4. Itemized list of spares offered (with quantity) and without prices as per Cl. 1.2.

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5. Type test certificates of inverter and RMU complying with clause 4.1.1-b and clause 6.0 a 6 respectively of this specification. Supporting test reports shall be provided by vendor during detailed engineering.

4.0 Technical specification of SCS:

SCS can be designed and assembled in maximum two containers. The solar compact station shall have a lifetime of at least 20 years.
Solar compact station of containerized type shall be designed with an internal cooling system for each compartment to ensure nominal output power up to at least 50 °C ambient temperature. The solar station container shall be insulated with fireproof material to maintain waterproofness over time and efficient thermal insulation. The proposed station shall be supported by HVAC design calculation to be approved by BHEL.

Moreover, the solar station container shall have easy accesses to each compartment for ease of installation, maintenance and for retrieval of equipment.

4.1 Inverter:

The technical specifications for the inverter include:

#	Technical parameter	Specification
a)	Control Type	Voltage source, microprocessor assisted, output regulation
b)	Output power rating	As per Cl. 1.1. Vendor to specify ratings being offered.
c)	AC grid connection	3-phase
d)	Output frequency	50 Hz
e)	Nominal output voltage	Value to be indicated by vendor
f)	Maximum DC input voltage (Max open circuit PV voltage)	At most 1500 V DC
g)	MPPT Range of control system	Range to be indicated by vendor.
h)	Total Harmonic Distortion (THD)	less than 4% at maximum power output
i)	Operating temperature range	5 to 60 deg C.
j)	Inverter efficiency	minimum 98.6 % at full load
k)	DC side peak power	Vendor shall confirm that inverter is suitable for overloading of DC input power. Vendor to indicate the

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		value in %. Minimum requirement is 30%
l)	Compatibility to Power Plant Controller (PPC)	Inverter shall have the necessary provisions (including any additional hardware/software required) for connection to a Power Plant Controller which shall be able to monitor and control the inverter remotely (both digital and analog inverter parameters)
m)	Max DC operating current	Value to be indicated by vendor.
n)	Max AC output current	Value to be indicated by vendor corresponding to the rated output power of the inverter.
o)	Grid Operating Characteristics	As per Annexure-1

4.1.1 Basic requirements (Inverter type, Standards, Technology, Interconnections, Interfaces etc)

#	Parameter	BHEL specification
a)	Inverter type	Grid-interactive. Inverter shall be able to wake-up in the morning and shutdown in the night automatically. The power circuits of the inverter shall be separated from the control circuits. The internal copper wiring of the inverter shall have flame resistant insulation. All conductors shall be made of copper. The inverter shall go to shut down/standby mode, with its contacts open, under the following conditions before attempting an automatic restart after an appropriate time delay: □ Insufficient Solar Power Input When the power available from the PV array is insufficient to supply the losses of the inverter, the inverter shall go to a standby/shutdown mode. □ Situation of Over or Under Voltage on CEB Grid The inverter shall restart after an over or under voltage shutdown when the utility grid voltage has returned within its limits after a minimum time delay of three (3) minutes. □ Situation of Over or Under Frequency on CEB Grid The inverter shall restart after an over or under frequency shutdown when the utility grid frequency has restored within limits after a minimum time delay of three (3) minutes. □ Power factor

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The solar farm shall be designed with the capability to supply rated power (MW) for power factors ranging between 0.95 lagging and 0.95 leading, available from 20% of rated power measured at Henrietta Substation. When operating below 20% of the rated output, the power factor may be less than 0.95 lagging.

Vendor shall provide a comprehensive statement on the overall power factor control strategy for the entire solar farm from inverter output to MV system to substation delivery both during day and night time. The power delivered to the grid must at all times meet the interconnection requirements for power factor both during day and night time. A capability curve is required to illustrate the power factor control strategy.

b) The proposed inverter shall have to comply with the following set of standards:

Sl.	Standard	Description
1	EN 50524	Data Sheet and Name Plate for Photovoltaic Inverters
2	IEC 61000-3-2	Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)
3	IEC 61000-3-3	Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection
4	IEC 61000-3-7	Assessment of emission limits for the connection of the connection of fluctuating installations to MV, HV and EHV power systems.
5	EN 61000-6-1,3	Electromagnetic Compatibility (EMC).
6	IEC 61683	Photovoltaic systems - Power conditioners – Procedure for measuring efficiency
7	IEC 62109	Safety of power converters for use in photovoltaic power systems
8	IEEE 519 -2014	IEEE Recommended practice and requirements for harmonic control of electric power systems, Institute of Electrical and Electronic Engineers, March 2014

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	The Power Conditioners deployed in the power plants must have valid test certificates for their certification as per above specified IEC / EN standards by ILAC accredited laboratories or one of the NABL Accredited Certification Centers. Where an applicable IEC/EN standard is not available, any equivalent IEC/EN standard shall be submitted. All the type test certificates as per the standards mentioned above shall be submitted for approval.	
c)	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 provided by the Manufacturer.
d)	Thermal management	Vendor shall submit HVAC calculations during detailed engineering.
e)	Environment protection	All PCB cards shall be provided with suitable coating (epoxy etc) for protection considering site conditions.

4.1.2 Protection systems

a)	Protection systems for current, voltage, temperature, surges, ground faults, fan failure etc. Fault indication shall be communicated to SCADA system	Overload Protection
b)		Over- Under Frequency
c)		Over- Under Voltage
d)		Loss of Main Protection
e)		Insulation Monitoring
f)		Full protection against accidental open circuit and reverse polarity at the input shall be provided.
g)		Anti-islanding protection: Fool proof protection against islanding.
h)		AC & DC over current
i)		AC & DC short circuit
j)		Array Ground fault detection
k)		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 surge protective device shall be suitable for the PV system in accordance with IEC 60364. The type, the discharge current and the impulse current of the surge protective device for the DC system shall be designed by the vendor and shall be submitted to the Employer for approval. The surge protective device shall feature a

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		local visual status indication and shall incorporate remote contact signalling to indicate normal operating state.
l)		Grid monitoring Protection against any sustained fault (lightning effect etc) in grid / feeder line.
m)		The inverter shall include appropriate self-protective and self-diagnostic features to protect itself and the PV array from damage in the event of inverter component failure or from parameters beyond the inverter's safe operating range due to internal or external causes. The self-protective features shall not allow signals from the inverter front panel to cause the inverter to be operated in a manner which may be unsafe or damaging. Faults due to malfunctioning within the inverter, including commutation failure, shall be cleared by the inverter protective devices and not by the existing site utility grid service circuit breaker.

Disconnection, Islanding and Automatic Reconnection after the Grid Failure Is Restored

Disconnection of the PV generator in the event of loss of the main grid supply is to be achieved by in built protection within the inverter. This may be achieved through rate of change of current, frequency, phase angle, unbalanced voltage or reactive load variants.
Operation outside the limits of power quality as described in Annexure-1 should cause the inverter to disconnect from the grid. In case of the above, tripping time should be less than 0.5 seconds, unless otherwise requested by the Employer.
Inverters shall have the ability to reconnect automatically to the grid following restoration of grid supply, subsequent to grid failure condition within a minimum time delay of three (3) minutes.

4.1.3 DC, AC side load break disconnecting switch / breaker provisions

a)	DC side	Load Break Switch Disconnector shall comply with IEC 60947. The terminals of the DC switch disconnector shall be shrouded against accidental contacts. The contacts of the DC switch disconnector shall be visible. Alternatively, positively linked externally visible indication for the "on", "off" may be provided subject to approval of the Employer. In addition, the "on" and "off" position of the switch disconnector shall be made available to the local SCADA system.
b)	AC side	Inverter output side shall be fitted with air circuit breaker with the following specifications: **Air Circuit Breaker:**

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		The air circuit-breaker shall be constructed and tested in accordance with IEC 60947. The air circuit-breaker shall have a rated service voltage of 690 Vac and a rated insulation voltage of 1000 V. The rated uninterrupted current and the rated short-time withstand current (1 sec) of the air circuit breaker shall be defined by the vendor based on the design of the system**.** The air circuit breaker shall be in withdrawable version. For withdrawable version, the position (connected, test, isolated) of the moving part shall be clearly indicated. It shall be impossible to rack-out the air circuit breaker unless the contacts are open. The withdrawable version shall be padlockable in "test position" and in "isolated position". The fixed version shall also be padlockable in open position. The following accessories shall be available for the air circuit breaker: □ Shunt opening/closing release □ Second shunt opening and second shunt closing release for redundancy □ Geared motor for the automatic charging of the closing springs, with limited inrush power □ Mechanical and electrical signalling of overcurrent release trip □ Trip reset release □ Auxiliary contacts (status, connected/test/disconnected position, ready to close, spring charged), pre-wired, to a small wiring terminal block. The Auxiliary contacts shall be used to provide status on the local SCADA system. The shunt devices and geared motor shall be suitable for 110 Vdc. Interlock system among circuit-breakers shall be available. The air circuit breaker shall be equipped with electronic trip release. The protection ANSI 49, ANSI 51, ANSI 50 and ANSI 51N shall be provided and adjustable. A watchdog shall be available. The configuration of the unit shall be password protected. The electronic trip release shall also be able to export information, including indication of tripped protection after a fault, alarms and warnings among others, and receive command through the local communication bus.

4.1.4 Front panel display and control

a)	Front panel screen (LCD and piezoelectric keypad operator interface Menu driven) with browsing / navigation provisions to 1) select display parameters 2) provide settings for various parameters	Instantaneous DC power input DC input voltage Total DC Current
b)		Instantaneous active AC power output Instantaneous reactive AC power output AC voltage (all the 3 phases and line) AC current (all the 3 phases and line) Frequency Power Factor

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		Energy (kWh) produced during entire day Total Energy (kWh) produced during its life
c)		Faults
d)		Other event logs
e)		Other features as may be necessary for supervisory control and operation of the inverters shall be provided.
f)		Automatic fault conditions reset for all parameters like voltage, frequency and/or black out.
g)		Each of these measurement displays shall have an accuracy of 1 percent of full scale or better. The display shall be visible from outside the inverter enclosure. Operational status of the inverter, alarms, trouble indicators and AC and the DC disconnect switch positions shall also be communicated by appropriate messages or indicator lights on the front cover of the inverter enclosure and SCADA. The parameters of the inverter shall be configurable via the communication bus on the local SCADA system.

4.1.5 Data logging, storage, retrieval, downloading, uploading

a)	Provision of built-in systems for data logging, storage, retrieval, downloading, uploading etc.	Date-cum-time stamped logging of DC and AC side parameters (current, voltage, frequency, phase, power factor, power, export energy etc), faults and other events.
b)		Data storage with retrieval features.
c)		Provision of all necessary built-in systems, ports etc for downloading the data into a PC / Laptop etc that will be required for reporting, data analysis and trouble-shooting purposes.
d)		Provision of all necessary built-in systems, ports etc for uploading of software etc that will be required for replacing, revising, upgrading the system.

4.1.6 DC Inputs and termination details.

Vendor shall supply the inverter with the termination features on DC side as tabulated below. Detailed drawings of termination arrangements with bus bar particulars such as positions, dimensions, hole sizes, spacing between holes, support to bus bar, etc shall be submitted for BHEL approval.

a)	DC input terminals	Each SMB output: ~160 kW Total no. of DC inputs shall be designed to be suitable for

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		a) SMB kW mentioned above (which includes 30% DC Overload) + 1 no. spare input b) Vendor to indicate the no. of DC inputs provided for each inverter to meet the requirement as per (a) above in offer.
b)	Fuses on DC input side	The fuse and fuse holder shall be in compliance with IEC 60947-3. Each SMB input shall be protected by a properly sized fuse with the gPV time current characteristics. The rated current and breaking capacity of the fuse shall be defined by the vendor in line with the design of the system. Fuse rating shall be finalized during detailed engineering.
c)	DC cable entry into panel	Bottom entry. Cable supply is within BHEL scope. Upto 1Cx240 sq-mm Copper, multi-strand, Armoured, XLPE insulation, PVC sheath cable will be used for each DC input. Exact type & size shall be provided during detailed engg. DC termination shall be suitable for the above cable.
d)	Gland plates	Drilled Gland plates shall be provided with holes to accommodate the cable glands.
e)	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/size shall be taken from BHEL before procurement of glands. Part no. and qty shall be indicated in the BOM. Inverters shall be supplied with all the glands fixed on the gland plates.
f)	Cable lugs, plain washers, spring washers, bolts and nuts	Similarly, cable lugs, bolts, nuts & plain washers, Zinc coated spring washers shall be provided by the vendor. Make for lugs: Dowells or any other reputed make with CE/VDE/UL/CSA/BIS. Approval of make and type/size shall be taken from BHEL before procurement of lugs. Part no. and qty shall be indicated in the BOM. Inverters shall be supplied with all these items fixed on

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		the bus bars at their respective positions.
g)	Bus bar design	Tinned Copper Busbars shall be provided.
h)	DC Side Negative Grounding	DC side negative grounding system shall be provided for the inverter. The same shall be indicated in the GA/SLD/Schematics and BOM.

4.1.7 AC Output and termination details.

The low voltage AC switchboard shall be rated at the nominal output voltage of the inverter and shall meet the requirements of IEC 61439. The low voltage AC switchboard shall have an insulation voltage of 1000 Vac. The low voltage AC switchboard shall not be of less than 2.0 mm metallic sheet. It shall have a segregation of at least Form 2b. The low voltage AC switchboard shall be free standing with at least front access and bottom entry.

The arrangement of incoming and outgoing ways shall be made in a logical consistent manner taking into consideration speed and safety during installation, operation and maintenance. The fault rating of the main switchboard shall be defined by the vendor for 1 second fully type tested and shall be fitted with air circuit breaker.

Operating handles, locking devices etc. shall be located within the limits of 450 mm and 1900 mm above floor level. The low voltage ac switchboard shall also incorporate On/Off/Trip status indicators on the front panel for all circuits.

Vendor shall supply the inverter 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 bus bar, etc shall be submitted within seven days after receipt of purchase order for BHEL approval.

a)	Number of AC outputs	Three phases: R, Y, B terminals
b)	AC cable entry into panel	Bottom/Top entry. Cable/bus supply shall be in vendor scope. Only copper is allowed. Final details along with sizing calculation shall be submitted by vendor during detailed engineering. Sufficient space shall be provided in the low voltage AC switchboard to cater for the cables to bend and spread from the cable gland plate or bar to the terminals in a logical consistent manner without crossing of cores of a cable or of adjacent cables. Moreover, adequate space shall be provided to facilitate the removal of any cable termination without the need to remove any other termination.

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c)	Gland plates	Drilled Gland plates shall be provided with holes to accommodate the cable glands.
d)	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. Inverters shall be supplied with all glands fixed on the gland plates.
e)	Cable lugs, plain washers, spring washers, bolts and nuts	Cable lugs, bolts, nuts & plain washers, Zinc coated spring washers shall be provided by the vendor. Make for lugs: Dowells or any other reputed make with CE/VDE/UL/CSA/BIS. Inverters shall be supplied with all these items fixed on the bus bars at their respective positions.
f)	Bus bar design	Busbars and busbar connections shall be of high conductivity copper and shall be extensible at both ends. Busbars shall be continuous and of constant cross section throughout their lengths with connections as short and straight as possible. Access to busbars and the busbar connections shall be gained only by the removal of covers secured by bolts and screws. Such covers shall be clearly marked “BUSBARS” along with the short circuit current rating and the fault level at the rated voltage. All neutral bus-bars shall be of the same cross-sectional areas as the associated phase bus-bars. All joints and connections to the bus-bars shall be tin coated the bus-bars and bus-bar supports shall be arranged to withstand, without damage, the effects of any fault current up to and including the maximum rated breaking capacity to the switchboard.
g)	Surge Protective Device	Surge protection device (3P) with suitable rating shall be provided at the input of the ACB. The surge protective device shall be suitable for the PV system in accordance with IEC 60364. The type, the discharge current and the impulse current of the surge protective device for the AC system shall be defined by the vendor and shall be submitted to BHEL for approval. The surge protective device shall feature a local visual status indication and shall incorporate remote contact signalling to indicate normal operating state. In case of surge protective device having the technology combining disconnection and short-circuiting device for safe electrical isolation in event of arcs, the status of the disconnection and short-circuiting device should also be made available remotely.

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h)	Indication	Indication for grid side supply ON / OFF status shall be available on the Door Interface.
i)	Measuring Device	Each outgoing section to the dry type transformer shall feature a digital multi-function meter which shall be interfaced with the local SCADA system. All digital multi-function meters shall be flush mounted, include digital displays of the following electrical parameters for all phases: Current (A), Voltage (V), Active Power (kW), Apparent Power (kVA), Reactive Power (kVAr), Kilowatt Hour (kWh), Kilovar Hour (kVArh), frequency (Hz), power factor, harmonic analysis (voltage harmonics, current harmonics, THD) up to the 50th order. All necessary instrument transformers, fuses and wiring, etc., shall be provided by the vendor. The accuracy of the measuring device shall be 0.2.

4.1.8 Panel related parameters

a)	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
b)	Bus bars	Busbars shall be of 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 in accordance with IEC 60446.
	Earthing terminals as per relevant standards	Earthing terminals shall be provided using tinned copper of suitable cross section. Terminals shall be brought out to facilitate external connections.

4.2 Medium Voltage Dry Type Transformer

The dry-type transformer shall comply with IEC 60076, specifically to IEC 60076-11. For the design of the transformer and relevant accessories, the vendor shall refer to the ambient conditions given by IEC 60076-11 and adapt to the site conditions. The dry type transformer shall be air-cooled by means of natural circulation (AN). The dry type transformer shall be explosion-resistant and fire-resistant. Where required by the mounting arrangement on site, anti-vibration pads shall be provided to prevent the transmission of sound to the supporting structure.

The core laminations shall be specially treated to avoid moisture absorption and consequent core corrosion. The primary and secondary coils of the dry type transformer shall be wound separately and encapsulated in cast resin using a vacuum pressure impregnation process. The voltage ratio shall be as detailed in table below.

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The dry type transformer shall be capable of withstanding, on any tap position, the thermal and dynamic effects of external short circuit conditions without damage. The value of percentage impedance measured at the mid tap position shall be in accordance with the standard values set out in IEC 60076-11. The transformer short-circuit withstand shall be verified in accordance with 60076-5 and the short circuit withstand time duration shall not be less than 2s.

The transformers shall be designed for operation in over fluxing (as per IEC 60076-11) and over-excitation (as per IEC 60076-1). The transformer shall be designed so that the mechanical and electrical stresses due to the inrush current cannot cause damage and/or rapid aging of the windings, the insulating material or any other parts.

The core of the transformer shall be electrically grounded. Two earthing terminals, each capable of carrying the full lower voltage fault current for a period of not less than 3 s, shall be provided. They shall be located one on either side and near the bottom of the transformer to facilitate connection to the local earthing system.

The transformer environmental, climatic and fire behavior classes shall be chosen in accordance with IEC 60076-11, taking in consideration the transformer ambient conditions and installation criteria. The transformers insulation system shall have temperature class F and the transformer shall be designed for a temperature rise class B (in accordance with IEC 60076-11 and IEC 60076-12).

The enclosure, where applicable, shall be chosen in order to ensure the compliance of the above-mentioned temperature rise, in accordance with the specifications given by IEC 62271-202 Annex DD. The temperature of the core, metallic parts and adjacent materials shall not reach a value that shall cause damage or undue ageing to any part of the transformer.

The measured losses and electrical characteristics of the transformer shall comply with IEC tolerances. In particular, no tolerances shall be applied for sound level and temperature rise limits.

The material used for the magnetic core shall have a low core loss factor and its laminations shall comply with the requirements of IEC 60404. It may be noted that overall losses shall be limited to the value specified in the below table.

The maximum magnetic induction of the transformer shall be chosen to limit local and overall temperature rise of the magnetic circuit.

The windings shall be made of copper. Aluminum is not authorized.

Windings and connections to the bushings and to the tap changers shall withstand mechanical and electro-dynamical stresses caused by handling or short-circuits.

An off-load tap changer shall be provided for the MV/LV.

The transformer shall be fitted with appropriate lifting lugs.

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The transformer shall be equipped with all the accessories, instrumentation and protections necessary for easy maintenance and for a safe and reliable operation.

In particular, windings and magnetic core temperature protection shall be provided.

Technical Specifications for Medium Voltage Dry Type Transformer:

a)	Power capacity	2 MVA
b)	Cooling	Natural circulation (AN)
	System frequency	50 Hz
c)	Off circuit tap changer	± 2.5% and ±5%
d)	Medium voltage system short circuit current	At least 25 kA for 1 second
e)	Low voltage system short circuit current	At least 50 kA
f)	High voltage winding	22 kV
g)	Low Voltage winding (open circuit)	As per inverter output voltage
h)	Highest system voltage	24 kV
i)	Power frequency withstand voltage	50 kV
j)	Rated lightning impulse withstand	125 kV
k)	Maximum inverter transformer losses allowed	1.1% (22 kW)
l)	Percentage impedance measured at the principal tap	In accordance with IEC 60076-11

4.3 Dry Type MV Auxiliary Transformer

The auxiliary loads inside the compact station shall be supplied by an auxiliary transformer fed from the solar compact station MV bus bar as per the SLD BHEL-CEB-ELE-001. The transformer shall be protected by MV fuses.

LV nominal system voltage is 400 V. Rated transformer LV voltage (which is the open circuit voltage as defined in IEC 60076) is stated here as 415 V to ensure 400 V at transformer terminals on full load.

Depending on voltage drop in the transformer, this 415 V value may vary slightly to suit the transformer manufacturer's standard design. The 22/0.415 kV common auxiliary transformer shall be properly sized to accommodate the low voltage load of the solar compact station and plus 25%. The final sizing shall be based on load calculations carried out by the vendor and subject to BHEL approval.

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Transformers shall comply with IEC 60076. The Auxiliary Transformer shall be dry type transformer in ventilated steel IP 41 enclosures.

Full details of the transformers shall be finalized by the vendor at detailed design stage where calculations shall be submitted to the BHEL for approval.

All alarms and tripping signals for transformers shall be individually connected to the SCADA for control and monitoring.

4.4 Medium Voltage Switchgear for Solar Compact Station

The medium voltage switchgear enclosed in the solar compact station shall be designed for indoor operation on a nominal system voltage of 22 kV, 3-phase, 50 Hz. The medium voltage switchboard shall be modular metal-enclosed high voltage air insulated switchgear manufactured to the requirements of IEC 62271. The switchboard shall fulfill the internal arc classification IAC AFLR, according to IEC 62271-200 and shall have a protection degree of at least IP41 (indoor)

Adjustment of protection settings, inspection of auxiliary circuits and replacement of fuses, lamps and multi-led shall be possible when the relevant feeder is in service. Bus-bars shall have a constant section for the whole switchboard. Phase sequence indication U-V-W-N (if any) shall be marked all over the busbar conductors and on each cable terminations. Each cell of the switchboard shall be divided into busbar, switchgear, MV cable connection and low voltage segregated compartments. “Switchgears” designates circuit breakers, switches.

The medium voltage switchboard shall consist of the following:

- one (1) cubicle designed for the control and protection of the incoming dry type transformer –SCS 1
- one (1) cubicle designed for voltage measurement - SCS 2
- two (2) other cubicles each designed for ring connection with the medium voltage switchboards of the remaining solar compact stations. –SCS 3 & SCS 4
- one (1) cubicle designed for the protection of the auxiliary transformer – SCS 5

The rated current of the three phase bus bars in the medium voltage switchboard shall be defined by the vendor, taking into consideration that the busbars shall be able to carry the full rated current of the Solar PV Farm when all the solar compact stations are ring connected.

4.4.1. SCS 1 - Cubicle for Control and Protection of Incoming Dry Type Transformer
The cubicle shall comprise of at least the following equipment:

4.4.1.1. Three-Position Disconnector

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The 3-position disconnector shall be positioned between the circuit-breaker and busbars. The disconnector can only be operated when the circuit breaker is maintained in open position. The 3-position disconnector shall be integral with fault making earth switches and shall be in one of three positions: “closed”, “open” or “earthed”. Mechanical indicators shall be provided for the switch position on the front facia. Auxiliary contacts shall be provided on the 3-position disconnector to indicate its status to the local SCADA system.

4.4.1.2. Circuit Breaker of SF6 Type

The circuit-breaker shall be of the SF6 type and shall comply with IEC 62271-100. The circuit breaker mechanical and electrical endurances shall be chosen from IEC 62271-100 in accordance with their duty. All circuit-breakers having the same rating shall be identical in arrangement and shall be interchangeable.

The rated current of the circuit breaker shall be defined by the vendor, taking into consideration the current rating of the dry type transformer for the ambient conditions specified. The rated short circuit current AC and DC components of the circuit-breaker shall be chosen in accordance with the results of the short circuit calculation. The minimum short circuit rating for MV switchgears shall be 25 kA, 1s & the minimum short circuit rating for LV switchgears shall be 50 kA, 1s. Any alternative short circuit rating is subjective to BHEL approval only.

The circuit breaker shall operate by means of a motor-operated spring-stored energy system, featuring a rapid acting mechanism, independent of the operator. The motor shall be suitable for 110 Vdc. Mechanical indicator for “charged-discharged” position shall be provided. In the absence of auxiliary power supply, the manual operation of the spring charging system shall be possible. The circuit breaker shall also be equipped with opening, closing and tripping coils suitable for 110 Vdc.

Auxiliary contacts shall be provided on the circuit breaker to indicate its status to the local SCADA system. The circuit breaker shall be equipped with a SF6 pressure switch with two (2) levels of alarms for low pressure and very low pressure respectively.

Mechanical indicators of the circuit breaker position shall be provided on the front fascia. A selector switch shall also be provided for the remote and local operation of the circuit breaker. Push buttons shall be made available on the front fascia of the low voltage compartment for the opening and closing of the circuit breaker. In addition, the following test blocks shall be provided on the front fascia of the circuit breaker cubicle:

- One (1) voltage test block
- One (1) current test block
- One (1) trip test block

4.4.1.3. Current Transformers

The current transformers shall comply with IEC 61869-2 and shall be of the dry type. The current transformers shall be provided for both protective relay and metering purposes.

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Toroidal current transformers will not be acceptable for metering purposes. Current transformers with split iron cores will also not be acceptable. The current transformers shall have dual primaries with current rating 100/200 A. The secondary windings of each set of current transformers shall have a rating of 5 A and shall be earthed at one point only, through a bolted disconnecting link.

The maximum continuous rating of the current transformers shall not be less than 150% of the maximum continuous rating of the associated dry type transformer. The current transformers including primary winding conductors shall be capable of withstanding without damage the peak and rated short-time currents of the associated equipment.

The vendor shall perform calculation for the burden, taking into consideration a spare capacity of 20%, to be submitted for approval during detailed engineering.

The rated volt-amp output of the current transformers shall not be less than the connected burden as installed in service, the burden of cable connections being taken into account. The output of the current transformers shall be not less than 10 VA with an accuracy limit factor of not less than 20 and the vendor shall ensure that the capacity of the current transformers provided is adequate for operation of the associated protective devices and instruments.

The current transformers provided for protective relay purposes shall be used for combined overcurrent and earth fault protection of the inverse time-overcurrent type and shall have Class 5P20. The current transformers shall have overcurrent and overcurrent limit factors not less than those corresponding to the design short circuit level of the system. The current transformers provided for metering and instrumentation purposes shall have class 0.2.

The current transformers shall be solidly fixed using appropriate support structures. When double-ratio secondary windings are specified, a label shall be provided at the secondary terminals of the current transformers, indicating clearly the connections required for each tap. The connections and the ratio in use shall be indicated on all connection diagrams.

Magnetization and core loss curves and dc resistance values shall be submitted for each type and rating of current transformers.

4.4.1.4. Earthing Switch for Cables:

The earthing switch shall be mounted in the cable compartment for cable earthing and shall be of the fault making type. Access to the cable compartment shall only be possible when the circuit is in earthed position. The earthing switch shall be mechanically interlocked with the integral earthing switch of the upstream 3-position switch disconnector, specified in sub-section above.

4.4.1.5. Protection Relay:

The protective relay shall be of approved numerical multi-function type and shall comply generally with the requirements of IEC 60255. The protection relay shall be of the latest technology available, at the time of implementation, incorporating a wide range of protection and control functions as well as comprehensive communication facilities. The system shall be IEC 61850 compatible.

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The protection relays shall include full programmable scheme logic, self-diagnostics and time tagged event recording (at least 100 events) to indicate the pre-fault currents and voltages by phase and maximum recorded analogue quantities. The protection relay shall integrate a user-friendly interface for troubleshooting and local programming with password. The protective relay shall be suitable for flush mounting on the front fascia of the LV compartment.

The protective relay shall offer two (2) independent over-current stages for phase elements (I>, I>>) and for earth fault (Io>, Io>>). The I>/Io> elements shall operate when the power frequency component of the current exceeds the set threshold. The time/current characteristic associated with these elements must provide a selection of inverse definite minimum time (IDMT) curves, or be settable to a fixed (definite) time delay. The relay shall be provided with a start function (and programmable relay output) that responds to the current exceeding either I> or Io> thresholds.

In addition, the relay shall have Neutral Voltage Displacement protection functionality.

The auxiliary power supply (in scope of vendor) for protective relays shall be 110V dc. All protective relays supplied shall be tested on site. Proper facility shall be provided for the testing of protective relays and associated circuits. In case, injection test plugs are required for this purpose, the vendor shall provide them.

The vendor shall be responsible for providing to BHEL relay setting details for relays within his supply correctly coordinated with relays of other systems, where applicable.

The vendor shall provide the associated documentation, programming software and communication cables as part of his scope of supply. A communications menu system shall be provided in accordance with IEC 60870. A hard copy as well as a soft copy of the relay configuration, settings and manuals shall be submitted to BHEL before commissioning.

4.4.1.6. Voltage Presence Indicators

The switchgear cubicle shall be equipped with voltage presence indicators according to IEC 62271-206. The voltage presence indicators shall allow the visualization of voltage presence on each phase with LED indication.

4.4.2. SCS 2 - Cubicle for Voltage Measurement

The cubicle for Voltage Measurement shall comprise of the following equipment:

4.4.2.1. 3-position disconnector:

The 3-position disconnector shall be positioned between the DIN fuses and busbars. The 3-position disconnector shall be integral with fault making earth switches and shall be in one of three positions: “closed”, “open” or “earthed”. Mechanical indicators shall be provided for the switch position on the front fascia. Auxiliary contacts shall be provided on the 3-position disconnector to indicate its status to the local SCADA system.

4.4.2.2. Medium voltage fuses

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The medium voltage fuses shall be of the DIN type featuring striker pins, suitable for the protection of the MV/ LV transformer for auxiliaries. The rated voltage of the fuses shall be 24 kV. The rated current and the rated breaking capacity of the fuses shall be determined by the vendor based on the rating of the MV/LV transformer for auxiliaries. The mechanical signaling and auxiliary contacts for blown fuses shall be provided.

4.4.2.3. Voltage transformers

The voltage transformers shall comply with IEC 61869-3 and shall be of the dry type. The three (3) voltage transformers shall be single-phase with dual core secondaries for metering and protection. The metering core shall have an accuracy Class 0.2 and rated burden of not less than 10VA. The protection core shall have an accuracy class of 3P a rated burden of not less than 15 VA. A spare burden capacity of 20% in the calculation for future use.

The primary windings shall be connected through DIN fuses featuring striker pins. The mechanical signaling and auxiliary contacts for blown fuses shall be provided. Access to the fuses shall only be possible when both its sides are effectively earthed. Proper interlocking should be provided between upstream 3-position disconnector and the downstream control and protection device on the secondary side of the voltage transformers to prevent power infeed from the secondary side of the voltage transformer.

The voltage transformer secondary circuits shall be earthed at one point only and metal cases shall be separately earthed. Secondary protection (fuses and miniature circuit breakers) shall be provided as close as possible to each voltage transformer and labelled to show their function and phase color. Auxiliary contact shall be provided for the status of the secondary equipment.

Voltage transformers shall be designed so that saturation of their cores does not occur when 1.732 times normal voltage is applied to each winding. The standard secondary voltage between phases shall be 110 V ac. Secondary circuits shall not be connected in parallel.

Calculations for voltage transformer design shall be submitted to BHEL for approval.

4.4.2.4. Voltage presence indicator

The switchgear cubicle shall be equipped with voltage presence indicators according to IEC 62271-206. The voltage presence indicators shall allow the visualization of voltage presence on each phase with LED indication.

4.4.3. SCS 3 & SCS 4 - Cubicle for Ring Connection

The cubicle for ring connection shall comprise of the following equipment:

4.4.3.1. Switch Disconnector

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The switch disconnector shall comply with IEC 62271-102 and should be fully insulated by SF6 gas. The switch disconnector shall be triple pole with integral fault making earth switch. The rated current of the switch disconnector shall be defined by the vendor, taking into consideration that the switch disconnector shall be able to carry and break the full rated current of the Solar PV Farm when all the solar compact stations are ring connected. The switch disconnector shall be capable of making on to a fault whose magnitude is equal to the specified short circuit level for 1 second.

The switch disconnector shall operate by means of a motor-operated spring-stored energy system, featuring a rapid acting mechanism, independent of the operator. The motor shall be suitable for 110 Vdc. Mechanical indicator for “charged-discharged” position shall be provided. In the absence of auxiliary power supply, the manual operation of the spring charging system shall be possible. The switch disconnector shall also be equipped with closing and opening coils suitable for 110 Vdc.

Auxiliary contacts shall be provided on the switch disconnector to indicate its status to the local SCADA system. The switch disconnector shall be equipped with a SF6 pressure switch with two (2) levels of alarms for low pressure and very low pressure respectively.

Mechanical indicators of the switch disconnector position shall be provided on the front fascia. A selector switch shall also be provided for the remote and local operation of the switch disconnector. Push buttons shall be made available on the front fascia of the low voltage compartment for the opening and closing of the switch disconnector.

4.4.3.2. Voltage Presence Indicator

The switchgear cubicle shall be equipped with voltage presence indicators according to IEC 62271-206. The voltage presence indicators shall allow the visualization of voltage presence on each phase with LED indication.

4.4.4. SCS5 - Cubicle for the Control and Protection of a MV Transformer for Auxiliaries

The cubicle for Control and Protection of a MV Transformer for Auxiliaries shall comprise of the following equipment:

- 3-position disconnector
- medium voltage fuses
- voltage presence indicator

4.4.4.1. 3-Position Disconnector

The 3-position disconnector shall be positioned between the DIN fuses and busbars. The 3-position disconnector shall be integral with fault making earth switches and shall be in one of three positions: “closed”, “open” or “earthed”. Mechanical indicators shall be provided for the switch position on the front facia. Auxiliary contacts shall be provided on the 3-position disconnector to indicate its status to the local SCADA system.

4.4.4.2. Medium Voltage Fuses

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The medium voltage fuses shall be of the DIN type featuring striker pins, suitable for the protection of the MV transformer for auxiliaries. The rated voltage of the fuses shall be 24 kV. The rated current and the rated breaking capacity of the fuses shall be determined by the vendor based on the rating of the MV transformer for auxiliaries. The mechanical signaling and auxiliary contacts for blown fuses shall be provided for status display on the local SCADA System

4.4.4.3. Voltage Presence Indicators

The switchgear cubicle shall be equipped with voltage presence indicators according to IEC 62271-206. The voltage presence indicators shall allow the visualization of voltage presence on each phase with LED indication.

4.4.6. Insulation Levels and Clearances

The withstand impulse level of switchgear and equipment when tested in accordance with IEC recommendations shall be not less than that specified.
All clearances on equipment, which has not been impulse tested, and the creepage distance across all insulators, shall comply with IEC 62271-100 for circuit breakers.

4.4.7. Temperature Rise

Each current carrying component of the equipment supplied shall be capable of continuous operation at the specified ratings without exceeding the maximum temperature rises stated in the appropriate IEC recommendations without assistance from any forced cooled ventilation or air conditioning plant.

Vendor shall state in the technical particulars, any permissible overload rating for the switchgear operating under emergency conditions, indicating the period of time permissible for the overload and the maximum ambient air temperature.

4.5 Auxiliary equipment:

4.5.1 UPS & AC to DC converter:

Essential a.c. supplies shall be provided from a uninterruptible power supply unit (UPS) through AC Distribution Board (UPSDB). Each UPS shall feed a 230 V a.c. switchboard for distribution to essential systems. UPS system shall include a static bypass switch and an external maintenance bypass switch.
UPS systems shall be full on-line double conversion type and shall comply with IEC 62040 and IEEE 944.The UPS shall have at least adequate capacity for a minimum of 3hrs autonomy at full load and battery life of at least 7 years.

The UPS must have modular architectures based on identical power modules which can be interchanged and connected in parallel, inside the UPS cabinet. Similarly, also batteries must be contained in battery modules (battery drawers) identical and interchangeable. Power modules shall be equipped with control and self-diagnostic circuits, in order to easily individuate the faulty module and the specific failure inside it.

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UPS system shall be installed in the solar compact stations catering to the minimum loads of MV Switchgear, SCADA, PLC, fire alarms and essential loads.

In a redundant configuration, if one module fails all the others ones will take the relevant load without any interruptions or transfer time at the output of the UPS.

The modularity of the UPS must allow the increase of the back-up time on site, simply by adding battery drawers.

Each Power Module will be composed by inverter, booster, battery charger, rectifier/PFC and automatic bypass.

The hermetic, maintenance-free stationary Nickel-Cadium batteries are housed in the UPS and/or in one of more cabinets of the same shape and size as that of the UPS itself. The positive and negative battery connections are protected by an adequate fuse-holder isolating switch.

The Command board must be equipped with microprocessor of suitable computation power. This command board must manage all functions of the UPS and will execute the following jobs:

- automatic recognition of the number of connected modules;
- automatic setting of the maximum reactive power that can be provided on the output;
- individual serial communication with the power modules by a dedicated line;
- recognition of a faulty module and diagnosis of the relevant fault;
- synchronization of the output voltage with the input voltage;
- generation of a reference sinewave curve to form the output voltage wave;
- control of the PFC, inverter and booster circuits in each power module;
- management of the automatic bypass;
- management of the battery runtime;
- management and recognition of the signals and measurements from each module;
- management of the user interface;
- management and memorizing of UPS history parameters and data;
- alarm and events memory with association of the time and date of the events themselves.

110V d.c. system shall be derived from the 230 V ac system using a set of three converters from 110V dc to 230V a.c. arranged such that they operate in parallel and each is operating at no more than 33% of its rated capacity. In the event of failure of two converters, the remaining one shall be rated to carry the full load.

An essential service AC distribution switchboard shall be incorporated in the cubicle for the UPS system. A manual bypass switch shall be provided to enable isolation of the UPS for maintenance. UPSDB shall have required number of breakers for feeding to emergency loads.

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The 110 V DC distribution switchboards boards shall feature properly sized circuit breakers for the control and protection of the incoming and outgoing feeders. The DC distribution switchboards boards shall also be equipped with surge and lightning arresters.

Distribution switchboards shall be type tested in accordance with IEC 61439 and IEC 60947. Type test certificates shall be sufficient to meet this requirement.

Proper measuring device shall be provided to indicate the d.c. system voltage on each distribution busbar section.

The following alarm devices shall be provided on the d.c. distribution switchboard:

- Undervoltage detection equipment, to give local indication and remote alarm when the system voltage falls below 80% (adjustable) of the rated system voltage. A time delay shall be incorporated to prevent initiation during temporary voltage drops caused by transient conditions including circuit breaker closing operations.
- Earth leakage detection equipment on each busbar to give local indication and remote alarm of the occurrence of an earth fault and to give discrimination between positive pole and negative pole earth faults. Test circuits shall be incorporated to simulate positive and negative faults by operation of test pushbuttons.
- Alarms for the distribution switchboard shall be grouped to give remote alarms on the local SCADA.

4.5.2 ACDB:

Distribution boards shall be provided as required for local 400/230 Vac distribution of lighting and small power (sockets). The lighting and small power circuits may use a common distribution board. They shall be fitted with the appropriate number and rating of circuit breakers, RCD's, distribution blocks, earth bars, neutral bars, etc. Electrical drawings shall be submitted for the LV Distribution board to the Engineer/Employer, prior to ordering of panel and equipment.

Each low voltage switchboard shall be of the single-busbar, built assembly type, in accordance with IEC 60439, IEC 61439 and MS 63.

ACDB shall have incomers fed from the auxiliary transformer located within the container.

The distribution switchboards shall include for the provision of the required number of circuit breakers plus at least two spare breaker and 30% spare space shall be provided.

Busbars shall be of constant cross section copper throughout. Output feeders in ACDB shall be meeting all the auxiliary load requirement of the SCS**.** However, final feeder list shall be provided during detailed engineering. Each compartment of the solar station container shall also be equipped with at least two small power installation (socket outlets).

In case auxiliary supply of PCU is met internally, then it should have sufficient power backup to meet the LVRT requirement. Vendor shall submit the detailed auxiliary supply arrangement during detailed engineering stage.

4.5.3 Lighting Design

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The design and installation shall be in compliance with MS 63 or equivalent. Drawings including location, type and number of lighting to be used (schedule of lighting) shall be submitted for BHEL's approval. The illumination levels for the SCS (Containerised facilities) shall be 300 lux.

The Design shall consider the following to minimise energy consumption:

a) Use of LED light fittings complete with LED Driver.
b) Required Illuminance Level at 750mm above floor level.
c) All Luminaries shall be rated 230V±6% and 50Hz.

Each compartment of the solar station container shall be equipped with a functional 230 Vac lighting, including of emergency lighting for the duration of 3 hours.

Emergency lighting shall be powered from self-contained battery sources and shall comply with BS 5266 and designed and manufactured as per BS EN 60598-2-22.
Self-Contained Emergency luminaries shall be carefully designed to achieve a 4-year battery design life.

4.5.4 Fire alarm System:

SCS shall employ a microprocessor-based analogue addressable Fire Alarm Control Panel (FAP). Manual call points, heat detectors and smoke detectors shall be sited in accordance with the minimum distances specified in BS 5839 to provide a full and effective system. Fire alarm system should comply with BS EN 54 and the applicable requirements of NEC standards. The control panel shall be designed and manufactured according to NFPA and European Standards. Vendor shall Submit manufacturer's technical product data, including specifications and installation instructions, for each type of fire alarm system equipment.

Vendor shall submit the fire alarm system of SCS for BHEL during detailed engineering. Vendor shall submit shop drawings for function and operation for BHEL's approval.

Solar compact stations shall have complete and failsafe thermal management systems. All associated equipment, shall have complete and failsafe fire detection/extinguishing system. The Fire Protection system design and associated alarms shall take into account that the plant will be unattended. All Fire Alarm signals shall be sent to the SCADA system in the local control room and shall be recorded.

4.6 Cabling scope:

Connections within SCS container including supply of cables, cable accessories, hardware etc., between inverter, inverter transformer, MV switchgear, auxiliary transformer, ACDB Panel, UPS, UPSDB, AC-DC converter and DCDB shall be in Vendor's scope. Suitable provision (conduit/cable trays) for doing SCADA cabling from the SCS equipment to SCADA panel shall be in vendor scope.

4.7 Provisions for SCADA interface

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a)	SCADA interface requirement	Solar PV power plant will have an integrated SCADA, which is within BHEL scope, whereby all the SCS equipment parameters as detailed in the above clauses will be integrated with other data systems such as solar array string monitoring, weather monitoring, pooling breakers monitoring etc.
b)	Communication protocol for all SCS equipment	All parameters of SCS equipment should be accessible and configurable through an industry standard communication link and displayed on the local SCADA in the Control Room. Specifically dedicated MODBUS TCP/IP on Ethernet Interface shall be provided for inverter for networking with SCADA.
c)	Parameters for SCADA	Inverter: All DC and AC parameters (current, voltage, frequency, phase, power factor, power, export energy etc), grid data, temperature, faults, other event logs, date/time logs, DC disconnector on/off status etc from each inverter will be required at SCADA control desk. inverter shall provide for this requirement. Parameters for all other SCS equipment shall be referred at the respective specification above.
d)	Remote monitoring and control features	SCS equipment shall have above detailed features to facilitate remote monitoring and control.

4.8 SCS container related parameters

a)	Weight & dimensions	Overall Width x Depth x Height in mm of SCS shall be indicated in the offer along with individual equipment. At least 800 mm (L) x800 mm (W)x2200 mm (H) space should be available in each SCS for placing BHEL supplied SCADA panel. SCADA panel shall be mounted by BHEL at site in this space.
b)	Ingress Protection of Container	IP 54 or higher (Outdoor duty).
c)	Air Flow Requirement (m3/hr)	To be indicated by vendor for each equipment. HVAC calculations shall be provided by vendor during detailed engg., including necessary analysis for ventilation.

5.0 Testing and inspection

Vendor shall submit Manufacturing Quality Plan(s) (MQP) and detailed Test Procedure along with drawings for BHEL's approval.

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Routine tests, as per relevant standards (IEC etc.,) shall be carried out on SCS equipment and shall be witnessed by BHEL/Customer & Customer authorized third party inspection agency.

a)	Routine tests shall be carried out by vendor on all the inverters as per customer approved MQP & relevant standards. Following are the minimum tests to be conducted but not limited to: (a) HV/IR test on 100% inverters. The inverter shall withstand a high voltage test of 2000 Vrms, between either the input or the output terminals and the cabinet (chassis). (b) Functional tests and Protection tests (by direct method or simulation method) on 100% inverters (c) Load testing of inverter on 1No. 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. (d) Temperature rise Test at rated full load on 1 no. inverter Test reports shall be submitted prior to dispatch of the system to the site.
b)	Routine testing for the switchgear shall be carried out in accordance with IEC 62271-200 Clause 7. Partial discharge tests in accordance with IEC 62271-200 Clause 7 shall be included in the routine testing.
c)	Routine tests shall be carried out by vendor on all the MV transformers as per customer approved MQP and IEC 60076. Temperature rise test at rated load shall be done on one transformer.
d)	Testing on the SCS Container as per the approved MQP

FAT shall be carried out by vendors for all other auxiliary equipment of SCS and internal test report shall be submitted by vendor for dispatch clearance. In particular, Vendor shall submit copy of 4 sets of test results in duplicate of the fire alarm system.

6.0 Documents to be submitted after receipt of purchase order

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

1. GTP/Datasheet and drawings of inverters, RMU, inverter transformer, auxiliary transformer and other auxiliary equipment, lighting, HVAC details, fire alarm system etc.,
2. General Arrangement of inverters, RMU, inverter transformer, auxiliary transformer and other auxiliary equipment, lighting, HVAC details, fire alarm system etc.,
3. BOM along with makes for all major components of inverter, AC and DC Combiner Panels, RMU, inverter transformer, auxiliary transformer, ACDB, UPS system, lighting, HVAC details, and fire alarm system etc.,
4. Cable schedule for control and power circuits wiring with in the SCS
5. Type test reports of inverters and transformers.
6. Evidence of type testing together with copies of test certificates from a recognized independent short-circuit testing station covering the switchgear offered shall be submitted. The type-test evidence shall show that the circuit-breakers have been tested in their cubicles and that all current carrying parts of these cubicles (busbars, isolating connections, current and voltage transformers, cable termination chambers, etc.) have been included for all tests required by IEC 62271-200 Clause 6 and IEC 60694 Clause.
7. Spares List
8. Civil Foundation drawings for containers outdoor installation on pedestals.
9. Manufacturing Quality Plan (MQP) of inverters, RMU, inverter transformer, auxiliary transformer and other auxiliary equipment

Vendor shall proceed with Manufacturing only after written clearance from BHEL, upon approval of the documents.

7.0 Documents to be submitted along with consignment

a) Following documents shall be submitted at the time of dispatch for inverters, transformers, RMU and other auxiliary equipment:

a. Test reports on individual equipment

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 including final as Built and tested drawings and datasheet, test reports, catalogs of individual components, schematic drgs shall be provided (segregated section wise) in both hard copy and soft copy.

d. PC/laptop interfacing software

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Annexure – 1
1. GUARANTEE OPERATING CHARACTERISTICS OF PV FARM

1.1 General

The Employer has identified a number of guaranteed operating characteristic for the PV Farm. However, the vendor shall provide any additional operating characteristic, deemed necessary, for the proper operation of the farm.

1.2 Fault Ride through Requirements

The PV Farm shall remain connected to the distribution system for system voltage dips on any or all phases, where the system voltage of the CEB network remains above 0.15 pu in the voltage duration profile of the Figure 11.1 below.

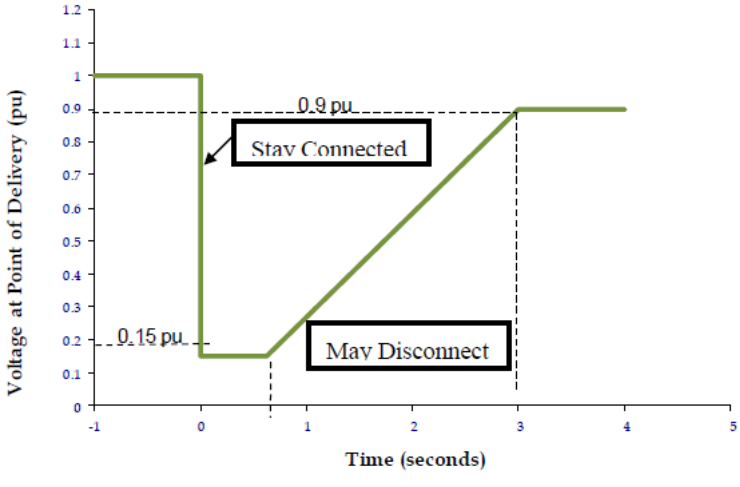

Figure 11.1: Fault Ride Through Requirement

In addition to remaining connected to the distribution System, the PV Farm shall have the technical capability to provide the following:

During the transmission system voltage dip, the PV Farm shall provide active power in proportion to retained voltage and maximise reactive current to the distribution system, within the technological and design limitations of the PV Farm facility and without exceeding its design limits. The maximisation of reactive current shall continue for at least 3 seconds or until the distribution System Voltage recovers to within the normal operational range of the distribution System whichever is the sooner.

Due to the dynamic nature of the transmission network, higher or lower fault clearance time and the LVRT voltage curve for the Solar Farm may be required, which shall then be discussed with the CEB.

The above LVRT curve shall be coordinated with the under-voltage protection settings to ensure grid support during fault conditions.

1.3 Frequency Response

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In case of frequency deviations in the CEB network, the PV Farm shall be designed to be capable to provide power-frequency response in order to contribute to the stabilization of the grid frequency. Under normal system frequency ranges, the PV Farm should operate with an active power output as set in Figure 11.2 below

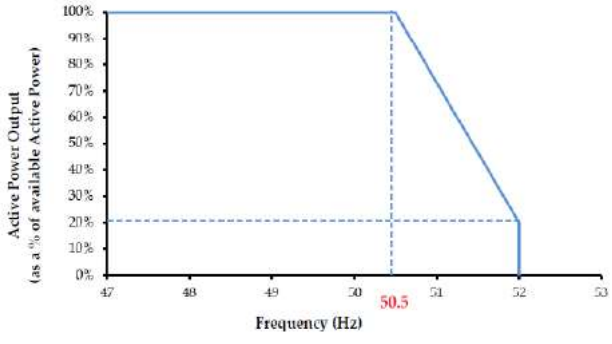

Figure 11.2: Frequency Response Requirements

The PV Farm shall have to reduce the power output about a system frequency above 50.5Hz. The power has to be reduced with a gradient of 40% per Hz of the instantaneously available power. The output power is only allowed to increase again as soon as the frequency is only 50.05Hz. Above 52Hz and below 47Hz the plant has to disconnect from the grid.

1.4 Reactive Power Capability

The PV Farm shall be equipped with reactive power control functions capable of controlling the reactive power supplied by the PV Farm at the point of delivery (POD, Henrietta Substation) with CEB's network. The reactive power control functions shall be mutually exclusive, which means that only one of the two functions mentioned below can be activated at a time:

- Power Factor Control
- Reactive Power Control
- Voltage Control

If previously agreed with the CEB on a case-by-case basis, a Voltage Control mode may also be required.
The actual operating modes, as listed above, as well as the operating point shall be determined by the CEB. The functional mode and set-point of the PV Farm shall not be changed unless instructed by CEB.

The PV farm shall supply rated power (MW) for power factors ranging between 0.95 lagging and 0.95 leading, available from 20% of rated power measured.

1.5 Power Quality

The PV Farm and equipment shall not cause excessive voltage excursions nor cause the voltage to drop below or rise above the range maintained by CEB. The PV Farm and equipment shall not introduce excessive distortion to the sinusoidal voltage or current waves.

1.6 Limitation of voltage flicker induced by the MSDG

The installation shall not cause abnormal flicker beyond the limits defined in IEEE 519.

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1.7 Harmonics

The total harmonic distortion will depend on the injected harmonic current and the system impedance seen from the POD.

The PV Farm output should have low current-distortion levels to ensure that no adverse effects are caused to other equipment connected to the utility system. The PV system electrical output at the POD should comply with IEEE Std. 519 and should be used to define the acceptable distortion levels for PV systems connected to a utility.

1.8 Voltage step change

The process of starting the PV Farm can sometimes cause step changes in voltage levels in the distribution network. These step changes are caused by inrush currents, which may occur when transformers or induction generators are energised from the network. Step voltage changes will also occur whenever a loaded generator is suddenly disconnected from the network due to faults or other occurrences.

Step voltage changes caused by the connection and disconnection of generating plants at the transmission level should not exceed +/- 3% for infrequent planned switching events or outages and +/-6% of the nominal voltage of 22 kV for unplanned outages such as faults.

1.9 Voltage Unbalance

The contribution to the level of unbalance of the voltage at the POD of any installation with generation should be less than or equal to 1.3%.

1.10 Ramp Rate Limits

The ramp up in normal conditions, positive ramp rate only during start-up and negative ramp rate during shut down of the PV Farm shall be settable from the SCADA system. The following ramp rate is being proposed:

- 10-minute maximum ramp rate: PV installed capacity (MW) divided by 1.5; and
- 1-minute maximum ramp rate: PV installed capacity (MW) divided by 5.

The ramp rate averaged over one minute should not exceed 3 times the average ramp rate over 10 minutes.

The ramp rate settings provided in the SCADA, shall be approved by CEB prior to testing and commissioning of the system on the network.

1.11 Active Power Constraints / Curtailment

For system security reasons, it may be necessary for CEB System Control Centre (SCC) to issue Curtail Instruction to the Solar Facility for the curtailment of active power output at the Point of Delivery.

The Solar Facility shall be capable of:

- Operating at a reduced level if a Curtail Instruction has been issued by the SCC.
- Commencing the reduction of the output power within 2 seconds of receiving the curtailment signal and complete the reduction not later than 30 seconds.

The accuracy of the set-point shall not deviate by more than ± 2% of the set point value.

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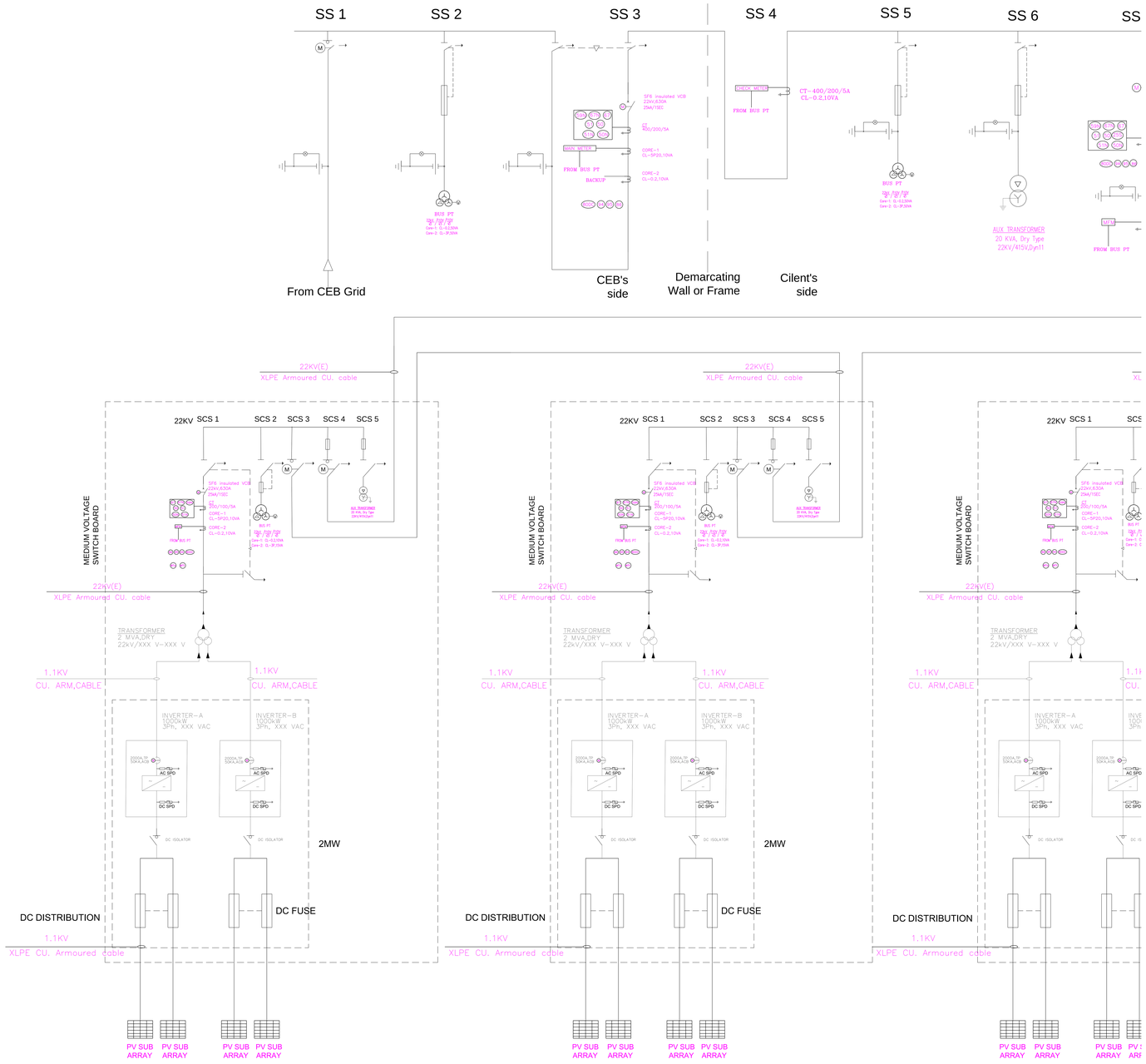

NOTE :
EXACT CABLE SIZES AND RATING OF CT/PT SHALL BE FINALIZED AFTER EQUIPMENT FINALIZATION

REF. DRG. No.

SIGN. & DATE

Vendor Bid Form

RFQ/NIT/Enquiry no.	**RAJBOS0075**
Description	**Supply and Commissioning Support of Solar Compact Station (SCS) for 8 MWac Solar PV Farm at Tamarind Falls, Henrietta, Mauritius**

Sr. No	DESCRIPTION	(VENDOR TO FILL THE DETAILS)
		RESPONSE
1	VENDOR NAME	
2	OFFICE ADDRESS	
3	WORKS ADDRESS (1,2 etc if any)	
4	Order to be Placed on, Details	
5	CONTACT PERSON	
6	TELE, MOBILE NO	
7	FIRM MAIL IDs	
8	GST NO, scanned copy (mandatory document).**To be attached under "Commercial documents,certificates and forms" packet cover**	
9	PAN NO, scanned copy(mandatory document)**.To be attached under "Commercial documents,certificates and forms" packet cover**	
10	BANK AND BRANCH NAME	
11	BANK ACCOUNT NO	
12	MSE VENDOR / NON MSE VENDOR	
13	Vendor to submit the MSE documents as per ITB/GCC/SCC along with UAM no/Udyam Registration . In case of non-submission, vendor will be treated at par with non-MSE vendors (Mandatory document).**To be attached under "Commercial documents,certificates and forms" packet cover**	
14	ORIGIN OF DISPATCH	
15	QUOTATION REFERENCE	
16	QUOTATION DATE	
17	Preference to make in India order2017 dated 16.09.2020.Submit certificate as per Self Declaration for Local content .**To be attached under "Commercial documents,certificates and forms" packet cover**	
18	Declaration required under Rule 144(xi) of General FinancialRules, 2017 amendment dt 23.07.2020 issued by Ministry of Finance, Govt. of India.Refer Annexure-X for Restrictions under Rule 144(Xi) of General Financial Rules,2017 amendment dt:23.07.2020. **The Bidder shall mandatorily submit Declaration as per format enclosed as part of tender.** **To be attached under "Commercial documents,certificates and forms" packet cover**	
19	The bidder shall mandatorily submit **Integrity Pact** (Company seal on each page and authorized signatures) **To be attached under "Commercial documents,certificates and forms" packet cover**	
20	The bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other bidder(s).This applies in particular to prices,specifications,certifications,subsidiary contracts,submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/guidelines.	

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UNPRICED BID

RFQ/NIT/Enquiry No.				RAJBOS0075				
Description	Supply and Commissioning Support of Solar Compact Station (SCS) for 8 MWac Solar PV Farm at Tamarind Falls, Henrietta, Mauritius							
Sl. No	Description	Qty	Unit	WHETHER QUOTED OR NOT **[YES/NO]**	HSN/SAC CODE	GST INDICATED **[IGST or (CGST+SGST)]**	GST %	CURRENCY
1	Supply of Solar Compact Station (SCS) + Freight	4	ST					INR
2	Supply of Spares for Solar Compact Station + Freight	1	ST					INR
3	Commissioning Support for Solar Compact Station	1	AU					INR

RFQ/NIT/Enquiry no.	:	RAJBOS0075		
Description	:	Supply and Commissioning Support of Solar Compact Station (SCS) for 8 MWac Solar PV Farm at Tamarind Falls, Henrietta, Mauritius		
TECHNO COMMERCIAL TERMS				
Sr. No	DESCRIPTION	Details	RESPONSE (AGREE/DISAGREE)	Remarks if disagree
1	TENDER TYPE	THIS TENDER IS NOT A GLOBAL TENDER. THE TENDER IS INDIGENEOUS OPEN TENDER . PLEASE REFER TENDER DOCUMENTS FOR DETAILED TERMS AND CONDITIONS APPLICABLE FOR THE TENDER.		
2	Price Basis	Firm i.e., from the date of PO to completion of supply if I&C/Commissioning Support 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).		
3	Terms of Delivery	**Free on Road (FOR) Basis** to JNPT Port, Mumbai / BHEL ROD-Mumbai Warehouse		
4	Delivery Period	**Supply:** 12 weeks from drawing approval **I&C:** 3 weeks from intimation by BHEL. **Drawing/Quality plan submission:** 1 week from PO		
5	Payment Term	a. 80% of basic supply value+100% taxes and freight charges will be pad 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. b. 10% of basic supply value will be paid on completion of I&C against submission of supplementary invoice with proof of completion of I&C along with I&C charges (if Any) c. Balance 10% (retention money) against submission of supplementary invoice along with PBG valid for Warranty Period+ 3 months clam period from BHEL Consortium Bank d. I&C/Supervision/Support: 100% on completion of I&C/Supervision and certification line tem wise on prorata basis with 15 days credit from the date of submission of complete set of documentation		
6	Payment Term	(b) For any deviation in payment term, the offer will be liable for loading as per Clause G of ITB. If loading not acceptable, offer will be outrightly rejected.		
7	Evalution of L1 vendor	Evaluation to be done on package wise, L1 for Supply on FOR destination basis will only be considered. L1 vendor (lowest Bidder) will be decided based on 'Cost to BHEL' value after considering the applicable loading factors and other costs including packing & forwarding, applicable duties, taxes, transportation until the site, transit insurance etc.		
8	Warranty	For Supply: 123 months from date of commissioning or 129 months from date of supply whichever is earlier for inverter. 27 months from date of commissioning or 33 months from date of supply whichever is earlier for Solar Compact Station.		
9	Pre Shipment Inspection	(a) Pre-shipment inspection at vendor's works will be carried out by BHEL / BHEL's customer/ Third party agency for which test reports shall be sent atleast one week in advance. Required assistance for testing will have to be provided by the vendor at the time of pre-shipment inspection, without any additional cost implication to BHEL. On successful completion of pre-shipment inspection/ inspection waiver, BHEL will issue material dispatch clearance certificate (MDCC) after which the vendor can proceed to the material dispatch. In case BHEL/ customer are unable to come for physical inspection at vendor works, BHEL/ customer may engage third party inspection agency. Hence all charges for third party inspection at vendor works to be borne by vendor.		
10	Pre Shipment Inspection	(b) Pre Shipment Inspection charges , if any, shall be considered while evaluating your offer to arive at "Total Cost to BHEL".The charges for the same shall be informed to you before Price Bid Opening.		
11	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. In case PSI call given without test report, then actual date of inspection only will be considered as date of delivery for purpose of penalty calculation.		
12	Penalty	(b) For any deviation in penalty term, the offer will be liable for loading as per ITB.		
13	E-way bill	E-way bill if applicable will be given by BHEL before Dispatch of ordered Items.However, vendor shall give request for road permit 24 hours in advance.		
14	Performance Bank Guarantee	PBG to be funished for 10% of the basic value of PO (Supply Portion). PBG Validity Period is Warranty Period + 3 Months Claim Period.		
15	Despatch Documents	Complete set of despatch documents in 3 sets shall be forwarded to BHEL directly. Despatch documents include 1.Invoice 2 copies in original 2.Packing List 3.Delivery challan 4.Original receipted LR 5.Copy of Inspection call letter issued by vendor to BHEL along with internal test reports/certificates. 6.Warranty Certificate as per PO 7.Dispatch clearance certificate issued by BHEL to vendor 8.Material Receipt Certificate (Original Receipted LR) . 9.Copy of manufacturing clearance or document approval e-mail issued by BHEL. 10.Inspection MOM with test reports/test certificate 11.Subvendor packing list/Invoice (If applicable) 12.copy of way bill generated 13.Bank guarantee 14.Copy of order acknowledgement for having received PO. 15.Copy of Insurance intimation fax/e-mail/letter 16. NIL short-shipment certificate.		
16	REVERSE AUCTION	BHEL shall be resorting to Reverse auction(RA) for this tender. RA shall be conducted among all the techno commercially qualified vendors as per BHEL RA guidelines		
17	Other terms & conditions	For detailed Terms and Conditions, kindly refer to the following: A: ITB B: GCC . 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.		
18	Validity	Quotation should remain valid for a period of 90 days from the due date of the tender		
19	Shipment	Kindly indicate the state from where the shipment will take place.		
20	Consignment Details	Weight and Dimension of consignment with packing.		
21	Insurance	Insurance up to **port of Mumbai / BHEL-ROD-Mumbai** is in Vendor's scope		

22	Pre Qualification Criteria Documents Submitted	1. Vendor shall be an Original Equipment Manufacturer (OEM) of inverter or inverter transformer or MV switchgear. Vendor shall submit the product catalogue as an evidence. 2. SCS Country of origin shall be India. Vendor shall submit a declaration that the manufacturing works of the container (where the proposed inverter, inverter transformer and MV switchgear along with the associated LT Panels and other auxiliary equipment shall be assembled) shall be in India. 3. Vendor should have supplied and commissioned similar containerized or skid or outdoor integrated solution including PCU of minimum 500 kW rating, inverter transformer and MV switchgear of 6.6 kV & above rating to any Solar PV project. PO & Commissioning certificate of the integrated solution from customer or EPC company shall be submitted as evidence.		
23	Changes in tender condition	Any changes in the specification, terms & conditions etc or in splitting ratio based on the MSE act /Make in India policy or due to any other reason, intimation will be given only to the vendors who have participated in this tender, hence it is mandatory that vendors should participate in the tender.		
24	INTEGRITY PACT	The bidder shall sign an "INTEGRITY PACT" in the formats enclosed.		
25	Unloading	Unloading at Mumbai Port / ROD-Warehouse is under BHEL scope.		
26	ADDITIONAL CONDITIONS	Any vendor who has been banned or under interim Suspension/suspended by BHEL or against whom action due to non performance has been initiated by BHEL are not eligible for participation. Such offers will not be considered for evaluation and will be rejected.		
27	Special Conditions of Contract (SCC)	In addition to the ITB and GCC stipulated in the tender document, the terms and conditions indicated under techno commercial form shall be treated as "Special Conditions of Contract (SCC). In case of Conflict between General Conditions of Contract (GCC) available in Tender document and Special Conditions of Contract (SCC) stipulated under bidding forms, SCC will prevail over GCC. Supply Scope of vendor is up to Mumbai port or BHEL-ROD-Mumbai Warehouse (will be intimated later). Since this is an export contract, the vendor needs to adhere to following conditions (wherever applicable) with reference to Standards of Seaworthy/Export packing, Handling etc : 1) Proper handling instructions to be pasted on the packages 2) In case of rejection of packages during physical inspection, it is the vendor's responsibility to set the packaging right by making visits to the Warehouse 3) Sea Worthy Packing 4) Fumigation Certificate to be produced 5) Inspection Window 6) Sealing and Certification that only items mentioned in the packing list are packed 7) Warranty visits if any are in vendor's scope 8) Any conveyances/travel/visa etc are in vendor's scope		
28	Declaration required under Rule 144(xi) of General FinancialRules, 2017 amendment dt 23.07.2020 issued by Ministry of Finance, Govt. of India.Refer Annexure–X for Restrictions under Rule 144(Xi) of General Financial Rules,2017 amendment dt:23.07.2020.	The Bidder shall mandatorily submit Declaration as per format enclosed as part of tender(ANNEXURE–A)		
29	MSE status(Applicable for MSE vendors only)	Documents to be submitted for claiming MSE status: Udyam Registration certificate. Latest MSE guidelines and circulars with subsequent amendments or clarifications (if any) will be applicable for this tender.Please refer NIT for MSE guidelines.		
30	Tax regime and introduction of Sec206C(1H) on sale of goods	Please note that with the recent changes in Tax regime and introduction of Sec206C(1H) on sale of goods witheffect from 01.10.2020 the vendors in line with the provisions of the said section are to collect TCS @0.075%from 01.10.2020 upto 31.03.2021 and 0.1% from there on Invoice value. (a).Vendor should raise /levy TCS in the Tax Invoice itself. No separate debit note will be accepted. (b).Vendor should indicate his Pan# and Tan # in the Tax invoice. In the Purchase order, Pan# of BHEL shall appear. (c).Vendor should remit the TCS so collected from BHEL and provide TCS certificates with invoice no., invoicedate, Amount etc. breakup details (d).If by any chance vendor is not remitting /not able to submit TCS certificates to BHEL on time then the TCSamount with penalty if any applicable will be recovered from vendor in his available bills. (e) No TCS is to be levied if TDS is applicable for the invoice transaction.(e.g. O&M cases, Service bills). (f) No TCS in case of Export/Import transactions. (g) TCS is applicable only for invoices dated 01.10.2020 and afterwards only.		
31	NIL Deviation to the Technocommerical terms	This form to be signed with Name and seal on all the pages and to be uploaded as acceptance to technocommercial conditions. Acceptance and submission of signed technocommercial form is treated as confirmation on "NIL DEVIATION ON TECHNO–COMMERCIAL TERMS" indicated in the techno commercial form.Technical or Commercial Deviation if any shall be separately uploaded under Techno-Commercial Bid. Deviations indicated in any other place shall not be considered by BHEL and the same are not valid.		
32	General Terms & Non-Peforming / Banned Vendors	The General Terms of Business or Sale of the Bidder shall not apply to this tender. No commercial terms to be attached, if attached it will be considered null and void. Any vendor who has been banned by BHEL or against whom action due to non-performance has been initiated by BHEL are not eligible for participation. Such offers will not be considered for evaluation and will be rejected		

33	Corrigendums	All corrigendums will be published in this e–procurement system (https://eprocurebhel.co.in/nicgep/app) and www.bhel.com . Vendors to keep themselves updated regularly and submit offers as required. In case of changes in scope of the tender and/ or technical specifications and commercial terms & conditions by BHEL during techno commercial evaluation, the same will be communicated only to the bidders who are participated in the tender. The techno-commercially qualified bidders will be asked for submitting impact price bid, if any is applicable as per BHEL purchase policy and guidelines.		
34	Declaration under Cartel formation	The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.		
35	Preference to make in India order2017 dated 16.09.2020	Government circular for Preference to make in India order2017 dated 16.09.2020 and subsequent amendments(if any) shall be applicable for this tender.		
36	Mandatory GeM registration ID for vendor	Government E-Marketplace(GeM) registration ID of vendor is mandatory for placement of purchase order. Vendor has to register in GeM portal and inform GeM registration ID before placement of purchase order. If GeM registration ID is not provided by vendor before PO placement, vendor is not eligible for placement of purchase order.		
37	Evaluation currency	Evaluation currency for this tender shall be INR.		
38	Local Content Qualification	The local content to categorize a supplier as a Class-I local supplier/ Class-II local supplier/ Non-local supplier and purchase preference to Class-I local supplier, is as defined in Public procurement (Preference to Make in India), Order 2017 dated 04.06.2020 issued by DPIIT. In case of subsequent Orders issued by the Nodal Ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of price bid/s against this NIT. Any Indian Bidder intending to avail the benefits shall submit the requisite documents as per the aforesaid orders.		
39	Changes in Statutory Levies	If any rate of Tax are increased or decreased, a new tax is introduced, an existing tax is abolished or any change in interpretation or application of any tax occurs in the course of execution of the contract within the contractual delivery period, which was or will be assessed on the bidder in connection with performance of the contract, an equitable adjustment of the contract price or deduction there from, as the case may be. However, these adjustments would be restricted to direct transactions between BHEL and the bidder/ agent of foreign bidder (if applicable). These adjustments shall not be applicable on procurement of raw materials, intermediary components, etc. by the bidder/ agent.		
40	Make in India Preference	For this procurement, Public Procurement (Preference to Make in India), Order 2017 dated 15.06.2017, 11.12.2018, 29.05.2019, 04.06.2020 & 16.09.2020, and subsequent Orders issued by the respective nodal ministry shall be applicable even if issued after issue of this NIT but before finalization of contract/PO /WO against this this NIT. In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and/ or local content in respective of this procurement, same shall be applicable.		
41	E-Invoice	E-invoicing under GST is being implemented w.e.f. 1st October 2020 for all the taxable person having turnover more than Rs. 500 Crore. It has been specified by the Govt that it is mandatory to mention a valid unique Invoice reference number (IRN) and QR code as generated from Govt. portal on a Tax invoice. Based on such information, GST ITC as claimed by BHEL in GST Returns shall be matched with the corresponding details uploaded by supplied in E-invoicing system. 2. In case the vendor delays or fails to provide all the documents as per the Purchase order at the time of submitting Tax invoice to BHEL, any subsequent financial loss to BHEL on account of vendor shall be to vendorâ€™s account. BHEL has further right to take necessary steps to protect its interest at the time of release of payment		

F.No.6/18/2019-PPD
Ministry of Finance
Department of Expenditure
Public Procurement Division

161, North Block,
New Delhi
23rd July, 2020

Office Memorandum

Subject: Insertion of Rule 144 (xi) in the General Financial Rules (GFRs), 2017

Rule 144 of the General Financial Rules 2017 entitled 'Fundamental principles of public buying', has been amended by inserting sub-rule (xi) as under:

Notwithstanding anything contained in these Rules, Department of Expenditure may, by order in writing, impose restrictions, including prior registration and/or screening, on procurement from bidders from a country or countries, or a class of countries, on grounds of defence of India, or matters directly or indirectly related thereto including national security; no procurement shall be made in violation of such restrictions.

(Sanjay Prasad)
Joint Secretary (PPD)
Email ID: js.pfc2.doe@gov.in
Telephone: 011-23093882

To,

(1) Secretaries of All Ministries/ Departments of Government of India
(2) Chief Secretaries/ Administrators of Union Territories/ National Capital Territory of Delhi

F.No.6/18/2019-PPD
Ministry of Finance
Department of Expenditure
Public Procurement Division

161, North Block,
New Delhi
23rd July, 2020

Order (Public Procurement No. 1)

Subject: Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017

Attention is invited to this office OM no. 6/18/2019-PPD dated 23rd July 2020 inserting Rule 144 (xi) in GFRs 2017. In this regard, the following is hereby ordered under Rule 144 (xi) on the grounds stated therein:

Requirement of registration

1. Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority, specified in **Annex I.**

2. This Order shall not apply to (i) cases where orders have been placed or contract has been concluded or letter/notice of award/ acceptance (LoA) has been issued on or before the date of this order; and (ii) cases falling under **Annex II**.

Transitional cases

3. Tenders where no contract has been concluded or no LoA has been issued so far shall be handled in the following manner: -

   a) *In tenders which are yet to be opened, or where evaluation of technical bid or the first exclusionary qualificatory stage (i.e. the first stage at which the qualifications of tenderers are evaluated and unqualified bidders are excluded) has not been completed*: No contracts shall be placed on bidders from such countries. Tenders received from bidders from such countries shall be dealt with as if they are non-compliant with the tender conditions and the tender shall be processed accordingly.

   b) *If the tendering process has crossed the first exclusionary qualificatory stage*: If the qualified bidders include bidders from such countries, the

entire process shall be scrapped and initiated *de novo*. The *de novo* process shall adhere to the conditions prescribed in this Order.

c) As far as practicable, and in cases of doubt about whether a bidder falls under paragraph 1, a certificate shall be obtained from the bidder whose bid is proposed to be considered or accepted, in terms of paras 8, 9 and 10 read with para 1 of this Order.

Incorporation in tender conditions

4. In tenders to be issued after the date of this order, the provisions of paragraph 1 and of other relevant provisions of this Order shall be incorporated in the tender conditions.

Applicability

5. Apart from Ministries / Departments, attached and subordinate bodies, notwithstanding anything contained in Rule 1 of the GFRs 2017, this Order shall also be applicable
   a. to all Autonomous Bodies;
   b. to public sector banks and public sector financial institutions; and
   c. subject to any orders of the Department of Public Enterprises, to all Central Public Sector Enterprises; and
   d. to procurement in Public Private Partnership projects receiving financial support from the Government or public sector enterprises/ undertakings.
   e. Union Territories, National Capital Territory of Delhi and all agencies/ undertakings thereof

Definitions

6. "Bidder" for the purpose of this Order (including the term 'tenderer', 'consultant' 'vendor' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency, branch or office controlled by such person, participating in a procurement process.

7. "Tender" for the purpose of this Order will include other forms of procurement, except where the context requires otherwise.

8. "Bidder from a country which shares a land border with India" for the purpose of this Order means

a) An entity incorporated, established or registered in such a country; or
b) A subsidiary of an entity incorporated, established or registered in such a country; or
c) An entity substantially controlled through entities incorporated, established or registered in such a country; or
d) An entity whose *beneficial owner* is situated in such a country; or
e) An Indian (or other) agent of such an entity; or
f) A natural person who is a citizen of such a country; or
g) A consortium or joint venture where any member of the consortium or joint venture falls under any of the above

9. "Beneficial owner" for the purpose of paragraph 8 above will be as under:

(i) In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person(s), has a controlling ownership interest or who exercises control through other means.
Explanation—

a. "Controlling ownership interest" means ownership of, or entitlement to, more than twenty-five per cent of shares or capital or profits of the company;

b. "Control" shall include the right to appoint the majority of the directors or to control the management or policy decisions, including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;

(ii) In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;

(iii) In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;

(iv) Where no natural person is identified under (i) or (ii) or (iii) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;

(v) In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

10. "Agent" for the purpose of this Order is a person employed to do any act for another, or to represent another in dealings with third persons.

Sub-contracting in works contracts

11. In works contracts, including turnkey contracts, contractors shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority. The definition of "contractor from a country which shares a land border with India" shall be as in paragraph 8 above. This shall not apply to sub-contracts already awarded on or before the date of this Order.

Certificate regarding compliance

12. A certificate shall be taken from bidders in the tender documents regarding their compliance with this Order. If such certificate given by a bidder whose bid is accepted is found to be false, this would be a ground for immediate termination and further legal action in accordance with law.

Validity of registration

13. In respect of tenders, registration should be valid at the time of submission of bids and at the time of acceptance of bids. In respect of supply otherwise than by tender, registration should be valid at the time of placement of order. If the bidder was validly registered at the time of acceptance / placement of order, registration shall not be a relevant consideration during contract execution.

Government E-Marketplace

14. The Government E-Marketplace shall, as soon as possible, require all vendors/ bidders registered with GeM to give a certificate regarding compliance with this Order, and after the date fixed by it, shall remove non-compliant entities from GeM unless/ until they are registered in accordance with this Order.

5/12

Model Clauses/ Certificates

15. Model Clauses and Model Certificates which may be inserted in tenders / obtained from Bidders are enclosed as **Annex III**. While adhering to the substance of the Order, procuring entities are free to appropriately modify the wording of these clauses based on their past experience, local needs etc. without making any reference to this Department.

(Sanjay Prasad)
Joint Secretary (PPD)
Email ID: js.pfc2.doe@gov.in
Telephone: 011-23093882

To

(1) Secretaries of All Ministries/ Departments of Government of India for information and necessary action. They are also requested to inform these provisions to all procuring entities.

(2) Secretary, Department of Public Enterprises with a request to immediately reiterate these orders in respect of Public Enterprises.

(3) Secretary DPIIT with a request to initiate action as provided under Annex I

(4) Chief Secretaries/ Administrators of Union Territories/ National Capital Territory of Delhi

6/12

Annex I: Competent Authority and Procedure for Registration

A. The Competent Authority for the purpose of registration under this Order shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT)*.

B. The Registration Committee shall have the following members*:

   i. An officer, not below the rank of Joint Secretary, designated for this purpose by DPIIT, who shall be the Chairman;
   ii. Officers (ordinarily not below the rank of Joint Secretary) representing the Ministry of Home Affairs, Ministry of External Affairs, and of those Departments whose sectors are covered by applications under consideration;
   iii. Any other officer whose presence is deemed necessary by the Chairman of the Committee.

C. DPIIT shall lay down the method of application, format etc. for such bidders as stated in para 1 of this Order.

D. On receipt of an application seeking registration from a bidder from a country covered by para 1 of this Order, the Competent Authority shall first seek political and security clearances from the Ministry of External Affairs and Ministry of Home Affairs, as per guidelines issued from time to time. Registration shall not be given unless political and security clearance have both been received.

E. The Ministry of External Affairs and Ministry of Home Affairs may issue guidelines for internal use regarding the procedure for scrutiny of such applications by them.

F. The decision of the Competent Authority, to register such bidder may be for all kinds of tenders or for a specified type(s) of goods or services, and may be for a specified or unspecified duration of time, as deemed fit. The decision of the Competent Authority shall be final.

G. Registration shall not be granted unless the representatives of the Ministries of Home Affairs and External Affairs on the Committee concur*.

H. Registration granted by the Competent Authority of the Government of India shall be valid not only for procurement by Central Government and its agencies/ public enterprises etc. but **also for procurement by State Governments and their agencies/ public enterprises etc. No fresh registration at the State level shall be required**.

I. The Competent Authority is empowered to cancel the registration already granted if it determines that there is sufficient cause. Such cancellation by itself, however, will not affect the execution of contracts already awarded. Pending cancellation, it may also suspend the registration of a bidder, and the bidder shall not be eligible to bid in any further tenders during the period of suspension.

J. For national security reasons, the Competent Authority shall not be required to give reasons for rejection / cancellation of registration of a bidder.

K. In transitional cases falling under para 3 of this Order, where it is felt that it will not be practicable to exclude bidders from a country which shares a land border with India, a reference seeking permission to consider such bidders shall be made by the procuring entity to the Competent Authority, giving full information and detailed reasons. The Competent Authority shall decide whether such bidders may be considered, and if so shall follow the procedure laid down in the above paras.

L. Periodic reports on the acceptance/ refusal of registration during the preceding period may be required to be sent to the Cabinet Secretariat. Details will be issued separately in due course by DPIIT.

[*Note:

i. In respect of application of this Order to procurement by/ under State Governments, all functions assigned to DPIIT shall be carried out by the State Government concerned through a specific department or authority designated by it. The composition of the Registration Committee shall be as decided by the State Government and paragraph G above shall not apply. However, the requirement of **political and security clearance as per para D shall remain and no registration shall be granted without such clearance**.

ii. Registration granted by State Governments shall be valid only for procurement by the State Government and its agencies/ public enterprises etc. and shall not be valid for procurement in other states or by the Government of India and their agencies/ public enterprises etc.]

8/12

Annex II: Special Cases

A. Till 31st December 2020, procurement of medical supplies directly related to containment of the Covid-19 pandemic shall be exempt from the provisions of this Order.

B. *Bona fide* procurements made through GeM without knowing the country of the bidder till the date fixed by GeM for this purpose, shall not be invalidated by this Order.

C. *Bona fide* small procurements, made without knowing the country of the bidder, shall not be invalidated by this Order.

D. In projects which receive international funding with the approval of the Department of Economic Affairs (DEA), Ministry of Finance, the procurement guidelines applicable to the project shall normally be followed, notwithstanding anything contained in this Order and without reference to the Competent Authority. Exceptions to this shall be decided in consultation with DEA.

E. This Order shall not apply to procurement by Indian missions and by offices of government agencies/ undertakings located outside India.

9/12

Annex III

Model Clause /Certificate to be inserted in tenders etc.

(While adhering to the substance of the Order, procuring entities and GeM are free to appropriately modify the wording of the clause/ certificate based on their past experience, local needs etc.)

Model Clauses for Tenders

I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.

II. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.

III. "Bidder from a country which shares a land border with India" for the purpose of this Order means: -

a. An entity incorporated, established or registered in such a country; or
b. A subsidiary of an entity incorporated, established or registered in such a country; or
c. An entity substantially controlled through entities incorporated, established or registered in such a country; or
d. An entity whose *beneficial owner* is situated in such a country; or
e. An Indian (or other) agent of such an entity; or
f. A natural person who is a citizen of such a country; or
g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above

IV. The *beneficial owner* for the purpose of (iii) above will be as under:

1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.
Explanation—

a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent. of shares or capital or profits of the company;

10/12

b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;

2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;

3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;

4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;

5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

VI. *[To be inserted in tenders for Works contracts, including Turnkey contracts]* The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

Model Certificate for Tenders (for transitional cases as stated in para 3 of this Order)

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I hereby certify that this bidder is not from such a country and is eligible to be considered."

Model Certificate for Tenders

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the

Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

Model Certificate for Tenders for Works involving possibility of sub-contracting

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

Model Certificate for GeM:

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this vendor/ bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this vendor/ bidder fulfills all requirements in this regard and is eligible to be considered for procurement on GeM. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

12/12

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annexure-13

On Bidder Letter Head

Date:

To,

M/s Bharat Heavy Electricals Ltd.
Electronics Division, Mysore Road,'
Bangalore – 560026

Sub: Model Clause / Certificate as per Annex-III (Tenders) of Restrictions Under Rule 144 (xi) of the General Financial Rules (GFRs) 2017, Dated 23.07.2020.

Ref: BHEL Tender / RFQ / NIT Number .....

I (authorized signatory for M/s .....) have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India , we certify that this bidder M/s .....[Vendor Name & address] is not from such a country or , if from such a country , has been registered with the competent authority . We hereby certify that we fulfill all requirements in this regard and is eligible to be considered [attach evidence of valid registration certificate with competent authority].

For M/s .....

Authorized Signatory
(With company seal & Name)

No. P-45021/2/2017-PP (BE-II)
Government of India
Ministry of Commerce and Industry
Department for Promotion of Industry and Internal Trade
(Public Procurement Section)

Udyog Bhawan, New Delhi
Dated: 16th September, 2020

To

All Central Ministries/Departments/CPSUs/All concerned

ORDER

Subject: Public Procurement (Preference to Make in India), Order 2017– Revision; regarding.

Department for Promotion of Industry and Internal Trade, in partial modification [Paras 2, 3, 5, 10 & 13] of Order No.P-45021/2/2017-B.E.-II dated 15.6.2017 as amended by Order No.P-45021/2/2017-B.E.-II dated 28.05.2018, Order No.P-45021/2/2017-B.E.-II dated 29.05.2019 and Order No.P-45021/2/2017-B.E.-II dated 04.06.2020, hereby issues the revised 'Public Procurement (Preference to Make in India), Order 2017" dated 16.09.2020 effective with immediate effect.

Whereas it is the policy of the Government of India to encourage 'Make in India' and promote manufacturing and production of goods and services in India with a view to enhancing income and employment, and

Whereas procurement by the Government is substantial in amount and can contribute towards this policy objective, and

Whereas local content can be increased through partnerships, cooperation with local companies, establishing production units in India or Joint Ventures (JV) with Indian suppliers, increasing the participation of local employees in services and training them,

Now therefore the following Order is issued:

1. This Order is issued pursuant to Rule 153 (iii) of the General Financial Rules 2017.

2. **Definitions**: For the purposes of this Order:

   'Local content' means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.

   'Class-I local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-I local supplier' under this Order.

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'Class-II local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-II local supplier' but less than that prescribed for 'Class-I local supplier' under this Order.

'Non - Local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content less than that prescribed for 'Class-II local supplier' under this Order.

'L1' means the lowest tender or lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.

'Margin of purchase preference' means the maximum extent to which the price quoted by a "Class-I local supplier" may be above the L1 for the purpose of purchase preference.

'Nodal Ministry' means the Ministry or Department identified pursuant to this order in respect of a particular item of goods or services or works.

'Procuring entity' means a Ministry or department or attached or subordinate office of, or autonomous body controlled by, the Government of India and includes Government companies as defined in the Companies Act.

'Works' means all works as per Rule 130 of GFR- 2017, and will also include *'turnkey works'*.

3. Eligibility of 'Class-I local supplier'/ 'Class-II local supplier'/ 'Non-local suppliers' for different types of procurement

(a) In procurement of all goods, services or works in respect of which the Nodal Ministry / Department has communicated that there is sufficient local capacity and local competition, only 'Class-I local supplier', as defined under the Order, shall be eligible to bid irrespective of purchase value.

(b) Only 'Class-I local supplier' and 'Class-II local supplier', as defined under the Order, shall be eligible to bid in procurements undertaken by procuring entities, except when Global tender enquiry has been issued. In global tender enquiries, 'Non-local suppliers' shall also be eligible to bid along with 'Class-I local suppliers' and 'Class-II local suppliers'. In procurement of all goods, services or works, not covered by sub-para 3(a) above, and with estimated value of purchases less than Rs. 200 Crore, in accordance with Rule 161(iv) of GFR, 2017, Global tender enquiry shall not be issued except with the approval of competent authority as designated by Department of Expenditure.

(c) For the purpose of this Order, works includes Engineering, Procurement and Construction (EPC) contracts and services include System Integrator (SI) contracts.

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3A. Purchase Preference

(a) Subject to the provisions of this Order and to any specific instructions issued by the Nodal Ministry or in pursuance of this Order, purchase preference shall be given to 'Class-I local supplier' in procurements undertaken by procuring entities in the manner specified here under.

(b) In the procurements of goods or works, which are covered by para 3(b) above and which are divisible in nature, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract for full quantity will be awarded to L1.

ii. If L1 bid is not a 'Class-I local supplier', 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to the Class-I local supplier's quoted price falling within the margin of purchase preference, and contract for that quantity shall be awarded to such 'Class-I local supplier' subject to matching the L1 price. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-I local suppliers, then such balance quantity may also be ordered on the L1 bidder.

(c) In the procurements of goods or works, which are covered by para 3(b) above and which are not divisible in nature, and in procurement of services where the bid is evaluated on price alone, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract will be awarded to L1.

ii. If L1 is not 'Class-I local supplier', the lowest bidder among the 'Class-I local supplier', will be invited to match the L1 price subject to Class-I local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such 'Class-I local supplier' subject to matching the L1 price.

iii. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price, the 'Class-I local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-I local supplier' within the margin of purchase preference matches the L1 price, the contract may be awarded to the L1 bidder.

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(d) "Class-II local supplier" will not get purchase preference in any procurement, undertaken by procuring entities.

3B. Applicability in tenders where contract is to be awarded to multiple bidders - In tenders where contract is awarded to multiple bidders subject to matching of L1 rates or otherwise, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

a) In case there is sufficient local capacity and competition for the item to be procured, as notified by the nodal Ministry, only Class I local suppliers shall be eligible to bid. As such, the multiple suppliers, who would be awarded the contract, should be all and only 'Class I Local suppliers'.

b) In other cases, 'Class II local suppliers' and 'Non local suppliers' may also participate in the bidding process along with 'Class I Local suppliers' as per provisions of this Order.

c) If 'Class I Local suppliers' qualify for award of contract for at least 50% of the tendered quantity in any tender, the contract may be awarded to all the qualified bidders as per award criteria stipulated in the bid documents. However, in case 'Class I Local suppliers' do not qualify for award of contract for at least 50% of the tendered quantity, purchase preference should be given to the 'Class I local supplier' over 'Class II local suppliers'/ 'Non local suppliers' provided that their quoted rate falls within 20% margin of purchase preference of the highest quoted bidder considered for award of contract so as to ensure that the 'Class I Local suppliers' taken in totality are considered for award of contract for at least 50% of the tendered quantity.

d) First purchase preference has to be given to the lowest quoting 'Class-I local supplier', whose quoted rates fall within 20% margin of purchase preference, subject to its meeting the prescribed criteria for award of contract as also the constraint of maximum quantity that can be sourced from any single supplier. If the lowest quoting 'Class-I local supplier', does not qualify for purchase preference because of aforesaid constraints or does not accept the offered quantity, an opportunity may be given to next higher 'Class-I local supplier', falling within 20% margin of purchase preference, and so on.

e) To avoid any ambiguity during bid evaluation process, the procuring entities may stipulate its own tender specific criteria for award of contract amongst different bidders including the procedure for purchase preference to 'Class-I local supplier' within the broad policy guidelines stipulated in sub-paras above.

4. **Exemption of small purchases**: Notwithstanding anything contained in paragraph 3, procurements where the estimated value to be procured is less than Rs. 5 lakhs shall be exempt from this Order. However, it shall be ensured by procuring entities that procurement is not split for the purpose of avoiding the provisions of this Order.

5. **Minimum local content**: The 'local content' requirement to categorize a supplier as 'Class-I local supplier' is minimum 50%. For 'Class-II local supplier', the 'local content' requirement is minimum 20%. Nodal Ministry/ Department may prescribe only a higher

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percentage of minimum local content requirement to categorize a supplier as 'Class-I local supplier'/ 'Class-II local supplier'. For the items, for which Nodal Ministry/ Department has not prescribed higher minimum local content notification under the Order, it shall be 50% and 20% for 'Class-I local supplier'/ 'Class-II local supplier' respectively.

6. **Margin of Purchase Preference**: The margin of purchase preference shall be 20%.

7. **Requirement for specification in advance**: The minimum local content, the margin of purchase preference and the procedure for preference to Make in India shall be specified in the notice inviting tenders or other form of procurement solicitation and shall not be varied during a particular procurement transaction.

8. **Government E-marketplace**: In respect of procurement through the Government E-marketplace (GeM) shall, as far as possible, specifically mark the items which meet the minimum local content while registering the item for display, and shall, wherever feasible, make provision for automated comparison with purchase preference and without purchase preference and for obtaining consent of the local supplier in those cases where purchase preference is to be exercised.

9. **Verification of local content**:

   a. The 'Class-I local supplier'/ 'Class-II local supplier' at the time of tender, bidding or solicitation shall be required to indicate percentage of local content and provide self-certification that the item offered meets the local content requirement for 'Class-I local supplier'/ 'Class-II local supplier', as the case may be. They shall also give details of the location(s) at which the local value addition is made.

   b. In cases of procurement for a value in excess of Rs. 10 crores, the 'Class-I local supplier'/ 'Class-II local supplier' shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.

   c. Decisions on complaints relating to implementation of this Order shall be taken by the competent authority which is empowered to look into procurement-related complaints relating to the procuring entity.

   d. Nodal Ministries may constitute committees with internal and external experts for independent verification of self-declarations and auditor's/ accountant's certificates on random basis and in the case of complaints.

   e. Nodal Ministries and procuring entities may prescribe fees for such complaints.

   f. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

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g. A supplier who has been debarred by any procuring entity for violation of this Order shall not be eligible for preference under this Order for procurement by any other procuring entity for the duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, in the manner prescribed under paragraph 9h below.

h. The Department of Expenditure shall issue suitable instructions for the effective and smooth operation of this process, so that:

   i. The fact and duration of debarment for violation of this Order by any procuring entity are promptly brought to the notice of the Member-Convenor of the Standing Committee and the Department of Expenditure through the concerned Ministry /Department or in some other manner;

   ii. on a periodical basis such cases are consolidated and a centralized list or decentralized lists of such suppliers with the period of debarment is maintained and displayed on website(s);

   iii. in respect of procuring entities other than the one which has carried out the debarment, the debarment takes effect prospectively from the date of uploading on the website(s) in the such a manner that ongoing procurements are not disrupted.

10. **Specifications in Tenders and other procurement solicitations**:

a. Every procuring entity shall ensure that the eligibility conditions in respect of previous experience fixed in any tender or solicitation do not require proof of supply in other countries or proof of exports.

b. Procuring entities shall endeavour to see that eligibility conditions, including on matters like turnover, production capability and financial strength do not result in unreasonable exclusion of 'Class-I local supplier'/ 'Class-II local supplier' who would otherwise be eligible, beyond what is essential for ensuring quality or creditworthiness of the supplier.

c. Procuring entities shall, within 2 months of the issue of this Order review all existing eligibility norms and conditions with reference to sub-paragraphs 'a' and 'b' above.

d. Reciprocity Clause

   i. When a Nodal Ministry/Department identifies that Indian suppliers of an item are not allowed to participate and/ or compete in procurement by any foreign government, due to restrictive tender conditions which have direct or indirect effect of barring Indian companies such as registration in the procuring country, execution of projects of specific value in the procuring country etc., it shall provide such details to all its procuring entities including CMDs/CEOs of PSEs/PSUs, State Governments and other procurement agencies under their administrative control and GeM for appropriate reciprocal action.

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ii. Entities of countries which have been identified by the nodal Ministry/Department as not allowing Indian companies to participate in their Government procurement for any item related to that nodal Ministry shall not be allowed to participate in Government procurement in India for all items related to that nodal Ministry/ Department, except for the list of items published by the Ministry/ Department permitting their participation.

iii. The stipulation in (ii) above shall be part of all tenders invited by the Central Government procuring entities stated in (i) above. All purchases on GeM shall also necessarily have the above provisions for items identified by nodal Ministry/ Department.

iv. State Governments should be encouraged to incorporate similar provisions in their respective tenders.

v. The term 'entity' of a country shall have the same meaning as under the FDI Policy of DPIIT as amended from time to time.

e. Specifying foreign certifications/ unreasonable technical specifications/ brands/ models in the bid document is restrictive and discriminatory practice against local suppliers. If foreign certification is required to be stipulated because of non-availability of Indian Standards and/or for any other reason, the same shall be done only after written approval of Secretary of the Department concerned or any other Authority having been designated such power by the Secretary of the Department concerned.

f. "All administrative Ministries/Departments whose procurement exceeds *Rs.* 1000 Crore per annum shall notify/ update their procurement projections every year, including those of the PSEs/PSUs, for the next 5 years on their respective website."

10A. Action for non-compliance of the Provisions of the Order: In case restrictive or discriminatory conditions against domestic suppliers are included in bid documents, an inquiry shall be conducted by the Administrative Department undertaking the procurement (including procurement by any entity under its administrative control) to fix responsibility for the same. Thereafter, appropriate action, administrative or otherwise, shall be taken against erring officials of procurement entities under relevant provisions. Intimation on all such actions shall be sent to the Standing Committee.

11. **Assessment of supply base by Nodal Ministries**: The Nodal Ministry shall keep in view the domestic manufacturing / supply base and assess the available capacity and the extent of local competition while identifying items and prescribing the higher minimum local content or the manner of its calculation, with a view to avoiding cost increase from the operation of this Order.

12. **Increase in minimum local content**: The Nodal Ministry may annually review the local content requirements with a view to increasing them, subject to availability of sufficient local competition with adequate quality.

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13. **Manufacture under license/ technology collaboration agreements with phased indigenization**: While notifying the minimum local content, Nodal Ministries may make special provisions for exempting suppliers from meeting the stipulated local content if the product is being manufactured in India under a license from a foreign manufacturer who holds intellectual property rights and where there is a technology collaboration agreement / transfer of technology agreement for indigenous manufacture of a product developed abroad with clear phasing of increase in local content.

13A. In procurement of all goods, services or works in respect of which there is substantial quantity of public procurement and for which the nodal ministry has not notified that there is sufficient local capacity and local competition, the concerned nodal ministry shall notify an upper threshold value of procurement beyond which foreign companies shall enter into a joint venture with an Indian company to participate in the tender. Procuring entities, while procuring such items beyond the notified threshold value, shall prescribe in their respective tenders that foreign companies may enter into a joint venture with an Indian company to participate in the tender. The procuring Ministries/Departments shall also make special provisions for exempting such joint ventures from meeting the stipulated minimum local content requirement, which shall be increased in a phased manner.

14. **Powers to grant exemption and to reduce minimum local content**: The administrative Department undertaking the procurement (including procurement by any entity under its administrative control), with the approval of their Minister-in-charge, may by written order, for reasons to be recorded in writing,

    a. reduce the minimum local content below the prescribed level; or
    b. reduce the margin of purchase preference below 20%; or
    c. exempt any particular item or supplying entities from the operation of this Order or any part of the Order.

    A copy of every such order shall be provided to the Standing Committee and concerned Nodal Ministry / Department. The Nodal Ministry / Department concerned will continue to have the power to vary its notification on Minimum Local Content.

15. **Directions to Government companies**: In respect of Government companies and other procuring entities not governed by the General Financial Rules, the administrative Ministry or Department shall issue policy directions requiring compliance with this Order.

16. **Standing Committee**: A standing committee is hereby constituted with the following membership:

    Secretary, Department for Promotion of Industry and Internal Trade—Chairman
    Secretary, Commerce—Member
    Secretary, Ministry of Electronics and Information Technology—Member
    Joint Secretary (Public Procurement), Department of Expenditure—Member
    Joint Secretary (DPIIT)—Member-Convenor

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The Secretary of the Department concerned with a particular item shall be a member in respect of issues relating to such item. The Chairman of the Committee may co-opt technical experts as relevant to any issue or class of issues under its consideration.

17. **Functions of the Standing Committee**: The Standing Committee shall meet as often as necessary, but not less than once in six months. The Committee

    a. shall oversee the implementation of this order and issues arising therefrom, and make recommendations to Nodal Ministries and procuring entities.
    b. shall annually assess and periodically monitor compliance with this Order
    c. shall identify Nodal Ministries and the allocation of items among them for issue of notifications on minimum local content
    d. may require furnishing of details or returns regarding compliance with this Order and related matters
    e. may, during the annual review or otherwise, assess issues, if any, where it is felt that the manner of implementation of the order results in any restrictive practices, cartelization or increase in public expenditure and suggest remedial measures
    f. may examine cases covered by paragraph 13 above relating to manufacture under license/ technology transfer agreements with a view to satisfying itself that adequate mechanisms exist for enforcement of such agreements and for attaining the underlying objective of progressive indigenization
    g. may consider any other issue relating to this Order which may arise.

18. **Removal of difficulties**: Ministries /Departments and the Boards of Directors of Government companies may issue such clarifications and instructions as may be necessary for the removal of any difficulties arising in the implementation of this Order.

19. **Ministries having existing policies**: Where any Ministry or Department has its own policy for preference to local content approved by the Cabinet after 1st January 2015, such policies will prevail over the provisions of this Order. All other existing orders on preference to local content shall be reviewed by the Nodal Ministries and revised as needed to conform to this Order, within two months of the issue of this Order.

20. **Transitional provision**: This Order shall not apply to any tender or procurement for which notice inviting tender or other form of procurement solicitation has been issued before the issue of this Order.

(Rajesh Gupta)
Director
Tel: 23063211
rajesh.gupta66@gov.in

ANNEXURE-14

SELF CERTIFICATION ON LETTERHEAD OF BIDDER (Make In India)

we hereby certify that

……

(supplier name) are local supplier meeting requirement of

(i) local content (50%) and above for the material against Enquiry No.**RAJBOS0075**

(ii) Local content (>20% and <50%) for the material against Enquiry No.**RAJBOS0075**

(strike off the above condition not applicable for you)

RAJBOS0075 dtd. 14.06.2021 for Supply and Commissioning Support of Solar Compact Station (SCS) for 8 MWac Solar PV Farm at Tamarind Falls, Henrietta, Mauritius through e-procurement route.

Details of location at which local value addition will be made is as follows:

……

……

……

We also understand, false declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

Seal and Signature of Authorized signatory with date

ಭಾರತ್ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್

भारत हेवी इलेक्ट्रिकल्स लिमिटेड

Bharat Heavy Electricals Limited

(A Government of India Undertaking)

ELECTRONICS DIVISION

P. B. No. 2606, Mysore Road, Bengaluru - 560 026

SCPV: BOS: ITB-Rev 05

INSTRUCTIONS TO BIDDERS

Bidder is requested to read the instructions carefully and submit their quotation taking into consideration of 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 05), General Conditions of Contract (document reference: SCPV: BOS: GCC-Rev 04) and Special Conditions of Contract, 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 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 Section-12, under Section-B).*
4. Regret letter (either through post or by mail or by EPS) indicating reasons for not quoting must be submitted without fail, in case of non-participation in this tender. Supplier shall be liable for removal as a registered vendor of BHEL when the supplier fails to quote against four consecutive tender enquiries for the same item or all enquiries in last two years for the same item, whichever is earlier.
5. Procurement directly from the manufacturers is 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. Agent/Representative authorized by the OEM/Principal in turn cannot further sub authorize any other firm for submitting the offer or for placement of order.

   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 the following documents:

(a) Authorization letter to quote and negotiate on behalf of such foreign-based bidder. (Annexure- AF)

(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 the Equipment/ System is commissioned and handed over to customer will be the sole responsibility of the Indian representative/associates/agent/liaison office.

(d) Refer **Annexure I** on "Guidelines for Indian Agents".

(e) In case, The Principal manufacturer decides not to quote directly to BHEL and authorized his representative to quote, the format attached as per annexure duly signed and sealed by authorized signatory and the same shall be attached along with offer.

8. (A) In case it is specified in the SCC as the terms of delivery DDP (delivery duty paid) , FOR destination to site, door delivery at site which means material cost, insurance, customs duty, safe guard duty (SGD) or any other taxes, duties, levies etc air fright sea freight customs handling charges inland transport from port to destination to vendor account.

(B) In case of imported scope of supply, (Not Covered in clause 8 A) 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 to supplier's account. All offers for imported scope of supply by air, must be made from any of the gateway ports (within the country) indicated (Refer Annexure II).

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: http://www.bhel.com/vender_registration/vender.php

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, 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. Bidder may refer "Guidelines for Suspension of Business Dealings with Suppliers/ Contractors" available on www.bhel.com for more details.

11. 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 your notice.

12. Offers to be submitted in English Language only.

13. For this procurement, the local content to categorize a supplier as a Class-I local supplier/ Class-II local supplier/ Non-local supplier and purchase preference to Class-I local supplier, is as defined in Public procurement (Preference to Make in India), Order 2017 dated **16.09.2020** issued by DPIIT. In case of subsequent Orders issued by the Nodal Ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of price bid/s against this NIT.

Any Indian Bidder intending to avail the benefits shall submit the requisite documents as per the aforesaid orders. The self declaration for Make in India or CA certificate for Make in India as per Annexure S/CA to be attached with the offer.

14. The Bidder shall mandatorily submit Declaration as mentioned below, under Rule 144(xi) of General Financial Rules, 2017 amendment dt 23.07.2020 issued by Ministry of Finance, Govt. of India. The declaration to be submitted on Company Letter head duly signed and sealed by authorised signatory, for ascertaining the eligibility of offer in the tender.

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered."

(Where applicable, evidence of valid registration by the Competent Authority shall be attached).

The Competent Authority for the purpose of registration under this Order shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT).

Refer Annexure-X for 'Restrictions under Rule 144(Xi) of General Financial Rules,2017 amendment dt: 23.07.2020'.

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 superscribed 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 superscribed 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 (or) if any part of the offer is incomplete, the entire offer of the bidder will be rejected.

2. Supplier shall ensure to superscribe 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 (duly filled, signed & stamped) must accompany Technical-Commercial offer without fail and should be submitted in original only.

The above indicated submission of Offers in "sealed envelope/hard copy" as mentioned in points B.1-B.3 is applicable for tenders that are not floated through E-Procurement System (EPS).

4. Validity: Unless otherwise specified in SCC (special commercial conditions of contract), the offer will be valid for a period of 90 days from the date of part-I bid opening and in case of Negotiation/Counter-offer/Reverse Auction, price validity will apply afresh for a period of 60 days from the date of according final price by bidder (or) upto original validity period, whichever is later.

5. 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 deviation.

6. 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.

7. 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. Approximate Packing dimension to be indicated in offer_(L)_ft x_(B)__ft x _(H)_ft, in case of ODC Load. Consignment beyond the dimension _(L)40_ft x_(B)8_ft x _(H)8_ft to be indicated in Offer.

8. "Price Bid" shall be complete in all respects containing price break-up of all components along with all applicable taxes and duties, Packing and forwarding charges, 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.

9. In addition, bidder shall also quote for erection & commissioning charges/erection supervision & commissioning charges (E&C service charges), documentation charges, testing Charges (type & routine), training charges etc. as applicable along with corresponding tax. The price summary must indicate all the elements clearly.

10. Wherever applicable, bidders should indicate "Lumpsum" Erection and Commissioning (or) Erection Supervision and Commissioning charges, as applicable (including To & Fro Fare, Boarding, Lodging, Local Conveyance etc.) for carrying out E&C activity and further handing over to customer. The quotation shall clearly indicate scope of work, likely duration of commissioning, pre-commissioning checklist (if any).

11. Wherever bidders require PAC (Project Authority Certificate)/applicable certificates for import of raw materials, components required for MNRE,DECC, EPCG Power Projects, Export Projects or other similar projects wherein supplies are eligible for customs 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.

12. Prices should be indicated in both figures & words**.** Bid should be free from correction/overwriting, using corrective fluid, etc. Any interlineation, cutting, erasure or overwriting shall be valid only if they are attested under full signature(s) of person(s) signing the bid else bid will be rejected. Any typographical error, totalling mistakes, currency mistake, multiplication mistake, summing mistakes etc. observed in the price bids will be evaluated as per **Annexure III** "Guidelines for dealing with Discrepancy in Words & Figures – quoted in price bid" and BHEL decision will be final.

13. Documents submitted with the offer shall be signed and stamped in each page by authorized representative of the bidder. However, scanned copy to be attached in E-Procurement System (EPS).

C. GUIDELINES FOR OFFER SUBMISSION:

The under-mentioned clauses 1, 2 & 3 will not be applicable for EPS tenders.

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.

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 ID specified in the SCC document of the tender.

3. Offers of Vendors who already have a valid Technical/Commercial MOU with BHEL-EDN for the items of the RFQ shall mention the relevant MOU reference no. and give only such other details not covered in the MOU.

4. 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 either of the two purchase officers whose names are mentioned in the SCC document of tender RFQ.

5. 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. For EPS tenders, e-mail notifications will be automatically generated and forwarded to registered e-mail ID/s of bidders during opening of tenders.

6. Bidder 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 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 (This clause will not be applicable for EPS tenders).

The above indicated submission of Offers as mentioned in points 6(a) to 6(d) is applicable for tenders that are not floated through EPS.

(e) In case of e-tender, all required documents should be uploaded before due date and time. Availability of power, internet connections, system/software requirements etc. will be the sole responsibility of the bidder. Wherever assistance is needed for submission of e-tenders, help-line numbers as available in the web-site of service provider of BHEL may be contacted.

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

D. <u>PROCESSING OF OFFERS RECEIVED:</u>

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. In case of withdrawal of any Technical/Commercial deviation(s) by the bidder before opening of price bids/conducting the Reverse Auction, revision of price/impact bid will not be accepted.

3. In case there is no change in the technical scope and/ or specifications and/ or commercial terms & conditions, 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).

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 bidders, 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 which have been impacted by addition/deletion/changes n the technical specification or commercial conditions. The impact may be +/- incremental value of the currency in which originally quoted.

5. Un-opened bids (including price bids) will be returned to the respective bidders after release of Purchase order and order acknowledgement. Regarding Offers for EPS tenders that get rejected on PQC/ techno-commercial grounds, the bids for the subsequent parts will not be opened i.e., both technical bid and price bid (Parts-II & III) will not be opened in case of rejection on PQC ground and price bid (Part-II/Part-III, as applicable) will not be opened in case of rejection on techno-commercial ground.

6. After receipt of Purchase Order, supplier should submit required documents viz., specified 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 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.
<u>“Total Cost to BHEL”</u> shall include total basic cost, packing & forwarding charges, taxes and/or duties (as applicable), freight charges, taxes on Services, customs clearance charges for imported items, any other cost indicated by bidder 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 DEEC, EPCG, MNRE projects, DFIA Projects, Physical Exports or such 100% exemptions (statutory benefits), project imports, customer reimbursements of statutory duties (like Basic Customs Duty and cess on customs duty), Input tax credits as applicable will also be taken into account for arriving at the Total cost to BHEL (wherever applicable and as indicated in SCC document of tender).

For EPS tenders, it shall be noted that the prices (including discounts) vis-a-vis currency quoted in EPS portal only will be considered as Final for the purpose of evaluation of the lowest bidder. Bidder shall ensure to indicate the applicable taxes against each line item in online portal, failing to which the same will be considered as inclusive/NIL.

In the course of evaluation, if more than one bidder happens to occupy L-1 status, effective L-1 will be decided by soliciting discounts from the respective L-1 bidders.
Incase more than one bidder happens to occupy the L-1 status even after soliciting discounts, the L-1 bidder shall be decided by a toss/draw of lots, in the presence of the respective L-1 bidder(s) or their representative(s).
Ranking will be done accordingly. BHEL's decision in such situations shall be final and binding.

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 basic of Evaluation of Total Cost to BHEL.

E. <u>INFORMATION ON PAYMENT TERMS:</u>

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. In case of High Sea Sales transaction, customs clearance of the consignment landed on Indian Sea/Air ports will be done by BHEL based on the original HSS documents provided by vendors. All warehousing charges due to delay in submission of complete and or correct HSS documents to BHEL will be to supplier's account only. Such recovery will be made out of any of the available bills **(Refer Annexure V)**.

3. Statutory deductions, if any, will be made and the deduction certificate shall be

issued.

A. 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.

   In addition to the above, Foreign vendors shall also submit relevant details of their bankers like Swift Code, Banker's Name &Address etc.

B. TDS deduction as per section 51 of CGST Act,2017 shall be applicable as per Gazette Notification No. 50/2018-Central Tax, Dated: 13th September 2018 and subsequent notification/s, as and when released by Govt. authorities.

4. Incomplete documentation will not be accepted. Delayed submission of invoice / documents may result in corresponding delay in payment. In this connection, request to also refer clause: G about invoicing & payment formalities under GST regime. Applicable documents shall be submitted to the purchaser at the time of execution of supplies/services for availing GST input credits.

F. STANDARD PAYMENT TERMS OF BHEL-EDN:

PURCHASE ORDERS FOR:	**SUPPLY WITH SERVICE(S)**	**SUPPLY ONLY**
INDIGENOUS PROCUREMENT	a. 80% of basic supply value+100% taxes and freight charges will be pad 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. b. 10% of basic supply value will be paid on completion of I&C against submission of supplementary invoice with proof of completion of I&C along with I&C charges (if Any) c. Balance 10% (retention money) against submission of supplementary invoice along with PBG valid for Warranty Period+ 3 months clam period from BHEL Consortium Bank **d.I&C/Supervision:** 100% on completion of I&C/Supervision and certification line tem wise on prorata basis with 15 days credit from the date of submission of complete set of documentation **e.O&M:** 100% O&M Charges are payable as per RFQ terms against report certified by BHEL with 15 days credit from the date of submission of complete set of documentation	f. 100% of PO value with taxes and freight will be paid in 45 days from the date of dispatch or 15 days 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.

	Note: In case PBG is not furnished, only 90% payment will be released against 100% claim without the consent of Vendor. This 10% basic amount withheld towards PBG will be paid either against submission of supplementary invoice & Original PBG (or) against supplementary invoice without PBG after expiry of Warranty period.	
IMPORT PROCUREMENT	g. 80% of basic supply value(excluding I&C charges) will be paid will be paid with 45 days credit against sight draft from the date of AWB/BOL on submission of complete set of documents as n PO. h. 10% of basic supply value will be paid on completion of I&C against submission of supplementary invoice with proof of completion of I&C along with I&C charges (if Any) i. Balance 10% (retention money) against submission of supplementary invoice along with PBG valid for Warranty Period+ 3 months clam period from BHEL Consortium Bank Note: In case PBG is not furnished, only 90% payment will be released against 100% claim without the consent of Vendor. This 10% basic amount withheld towards PBG will be paid either against submission of supplementary invoice & Original PBG (or) against supplementary invoice without PBG after expiry of Warranty period.	j. 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 + 3months claim period from BHEL consortium bank if applicable.
HIGH-SEA SALES PROCUREMENT	k. 100% of basic value will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation, whichever is later Note: In case PBG is not furnished, only 90% payment will be released against 100% claim without the consent of Vendor. This 10% basic amount withheld towards PBG will be paid either against submission of supplementary invoice & Original PBG (or) against supplementary invoice without PBG after expiry of Warranty period.	l. 100% of basic value will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation, whichever is later.

1. **Erection and Commissioning:**

   Evaluation methodology: Unless and otherwise specified in SCC, E&C charges should not be less than 10% of the main supply value. In case the quoted total E&C value is less than 10% of the main supply value, BHEL shall evaluate Bidders Price deducting differential amount from main supply price proportionally from all items and apportioning towards E&C charges.

   Payment term: 100% E&C charges along with tax as applicable, will be paid in 15 days credit from the date of submission of supplementary invoice/documents against proof of completion of E&C.

2. **Erection Supervision and Commissioning:**

   Evaluation methodology: Unless and otherwise specified in SCC, E&C charges should not be less than 5% of the main supply value. In case the quoted total E&C value is less than 5% of the main supply value, BHEL shall evaluate Bidders Price deducting differential amount from main supply price proportionally from all items and apportioning towards E&C charges.

   Payment term: 100% E&C charges along with tax as applicable, will be paid in 15 days from the date of submission of supplementary invoice/documents against proof of completion of E&C.

3. **Comprehensive Annual Maintenance Contract:**

   Evaluation methodology: Unless and otherwise specified in SCC, CAMC will be applicable for a period of 04 years from the date of expiry of warranty period (or) from the date of completion of commissioning of equipment, whichever is later and the total CAMC value should not be less than 20% of the main supply value. In case the quoted total CAMC value is less than 20% of the main supply value, BHEL shall evaluate Bidders Price deducting differential amount from main supply price proportionally from all items and apportioning towards CAMC charges.

   Payment terms: 100% CAMC charges along with tax as applicable, will be paid in 15 days from the date of submission of supplementary invoice/documents against proof of completion of CAMC on quarterly basis.

4. **Terms of Payment for Training:** 100% payment will be made in 45 days from the date of completion of Training or 15 days from the date of submission of complete set of invoice along with documentary evidence, whichever is later.

LOADING FACTORS FOR DEVIATION IN PAYMENT TERMS (APPLICABLE FOR IMPORT PROCUREMENT ONLY):

(i) For offers received with Sight draft payment term in place of Usance draft, loading applicable will be 1.0% of basic value.

(ii) For offers received with Letter of Credit payment term with Usance of 45 days, loading applicable will be 2.5% of basic value.

Additional loading of 2% will be applicable for payment term as Letter of Credit at Sight.

5. Any payment term with credit period of less than 45 days for indigenous supply/HSS and any other variation of payment terms are liable for rejection.
6. Standard payment terms indicated in Clauses**: F (a), (b), (c), (d), (e), (f), (g), (h), (i) & (j) ,(k),(l) will** not attract any loading.

Note 1: Basic value of Purchase Order mentioned above will include all components of the purchase order and will exclude only taxes, duties, freight, training charges, E&C and AMC charges (wherever applicable). Wherever the Purchase Order is split into import portion and indigenous portion of supply, minimum % to be quoted for Services, wherever mentioned, will be of both purchase order values put together.

Note 2: In case of multiple packages/units in a power plant, payment of E&C charges will be processed on pro-rata basis.

Note 3: No deviation will be permitted from the duration of Guarantee/Warranty and/or Comprehensive Annual Maintenance Contract period specified in SCC.

G. <u>Terms & Conditions to be complied under GST regime</u>:

1. All invoices to contain BHEL-EDN (buyer) GSTIN number: 29AAACB4146P1ZB. However, for CGST +SGST/UGST billing outside the state of Karnataka, invoice has to be generated with BHEL's Nodal Agency GSTIN number. Address of Nodal Agency along with GSTIN number will be provided by BHEL at the time of issuing dispatch clearance.
2. The Bidder shall mention Bidder's GSTIN number in all quotations and Invoices submitted.
3. The Bidder shall also mention HSN (Harmonized System of Nomenclature) / SAC (Services Accounting Code) mandatorily in all quotations and invoices submitted.
4. Invoice submitted should be in the format as specified under GST Laws viz., all details as mentioned in Invoice Rules like GST registration number(GSTIN), invoice number with date of issue, quantity, rate, value, taxes with nomenclature – CGST, SGST, UGST, IGST mentioned separately, HSN Code / SAC Code etc. Invoice should be submitted in original for buyer plus duplicate for credit availment.
5. Payment of GST to Vendor will be made only if it is matching with data uploaded by the Vendor in GST portal.
6. For invoices paid on Reverse charge basis – "Tax payable on reverse charge basis" to be mentioned on the invoice.
7. In case GST credit is delayed/denied to BHEL due to non/delayed receipt of goods and/or tax invoice or expiry of timeline prescribed in GST law for availing such ITC, or any other reasons not attributable to BHEL, GST amount will be recoverable from vendor along with interest levied/ leviable on BHEL.
8. In case vendor delays declaring such invoice in his return and GST credit availed by BHEL is denied or reversed subsequently as per GST law, GST amount paid by BHEL

towards such ITC reversal as per GST law will be recoverable from vendor/contractor along with interest levied/ leviable on BHEL.

9. Vendor should intimate BHEL immediately on the same date of invoicing without any delay.

10. In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the supplies, within the calendar month notified by BHEL.

11. Bidders to note that Rules & Regulations pertaining to E-way bill system are to be strictly adhered to, as and when notified by Govt. authorities.

H. Performance bank guarantee (PBG):

Performance bank guarantee (PBG) will be applicable as called in the tender documents. Unless otherwise specified in the SCC, the PBG against performance of the contract shall be valid for a period of 24 months from the date of dispatch of goods + claim period of 03 months, for a value equal to 10 % of the basic value of the purchase order which will include all components of the purchase order and will exclude only taxes, duties, freight, training charges, E&C and AMC charges (wherever applicable).

1. The BG issued in Indian Rupees by Banks in India is to be executed on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Bank issuing the guarantee.

2. No deviation for the duration and value of PBG will be permitted.

3. PBG shall be from any of the BHEL consortium of bankers **(refer Annexure VI)**.

4. PBGs from nationalized banks are also acceptable.

5. 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.

6. PBG should be in the format specified **(refer Annexure VII)**. No deviation to this format will be allowed. However, in case BHEL changes the PBG format, bidder shall honor the same.

7. Bank Guarantee should be enforceable in Bangalore.

8. 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 Bangalore.

b. From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor Country's Bank)

b.1 Please note 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 favor of the Indian Bank's (BHEL's Consortium Bank) branch in India. It shall be noted that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor.

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 is 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).

9. Expired PBGs will be returned only after expiry of the claim period.

10. PBG shall not be applicable for spares.

I. PROVISONS APPLICABLE FOR MSE VENDORS (MICRO AND SMALL ENTERPRISES) :

Benefits/facilities as applicable for Micro and Small Enterprises (MSEs) shall be available to MSEs registered with Government designated authorities as per the Purchase & Price Preference Policy of the Government subject to them becoming eligible otherwise.

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 the Udyog Aadhaar Memorandum (UAM) /UDYAM Registration certificate along with attested copy of a CA certificate (Annexure VIII) applicable for the relevant financial year (latest audited) along with the tender documents in the Part-I bid to avail the applicable benefits.

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

Documents have to be notarized/attested by a Gazetted officer and must be valid as on the date of part I bid opening for the vendors to be eligible for the benefits applicable for MSE vendors. Please note that no benefit shall be applicable if any deficiency in the above required documents are not submitted before the price bid opening/Reverse Auction. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal.

Bidders to however note the documents that shall be furnished in order to establish credentials as MSE vendor should be as per the extant statutory requirements specified by the Ministry of Micro, Small and Medium Enterprises.

PURCHASE PREFERENCE FOR MSE VENDORS:

MSE vendors quoting within a price band of L1 + 15% shall be allowed to supply up to 25% 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 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. 3% of the 25% will be earmarked for women owned MSEs.

5. 25% of the 25% (i.e., 6.25% of the total enquired quantity) will be earmarked for SC/ST owned MSE firms provided conditions as mentioned in (1) & (2) are fulfilled.

6. In case where no SC/ST category firms are meeting the conditions mentioned in (1) and (2) or have not participated in the tender, the 6.25% of earmarked quantity for SC/ST owned MSE firms will be distributed among the other eligible MSE vendors who have participated in the tender.

7. In case after the bid opening it is seen that no MSE has become L1, then depending on the nature of the item, if it is not possible to split the tendered items/quantities on account of reasons like customer contract requirements of supplying one make for a given project or technical reasons like the tendered item being a system etc., then BHEL would not counter offer the L1 prices even though there may be MSE bidders within the +15% band of L1. Such information that tendered quantity will not be split shall be indicated in the SCC.

J. <u>INTEGRITY COMMITMENT IN THE TENDER PROCESS, AND EXECUTION OF CONTRACTS</u>:

1. <u>Commitment by BHEL:</u> 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. <u>Commitment by Bidder(s)/ Contractor(s):</u>

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.

K. Integrity Pact (IP):

a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner.
A panel of independent External Monitors (IEMs) have been appointed to oversee implementation of IP in BHEL.
The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory who signs in the offer) along with techno-commercial bid. Only those Bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.

b) Please refer Section-8 of the IP for Role and Responsibilities of IEMs (Annexure IX). In case of any complaint arising out of the tendering process, the matter may be referred to the IEM mentioned in the tender.

Note: No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department."

L. Fraud prevention policy:

The Bidder along with its associates/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 portal of Units/Region intranet.

Annexure

Annexure I

Guidelines for Indian Agents

- **Definition of Indian Agent**: An Indian Agent of foreign prinicipal is an individual, a partnership, an association of persons, a private or pubile company, that carries our specific obligation(s) towards processing of BHEL tender or finalization or execution of BHEL's contract on behalf of the foreign supplier.

In case of yes, vendor to note the following and reply accordingly:

i. BHEL shall deal directly with foreign vendors, wherever required, for procurement of goods. However, if the foreign principal desires to avail of the services of an Indian agent, then the foreign principal should ensure compliance to regulatory guidelines - which require mandatory submission of an Agency Agreement.

ii. It shall be incumbent on the Indian agent and the foreign principal to adhere to the relevant guidelines of Government of India, issued from time to time.

iii. The Agency Agreement should specify the precise relationship between the foreign OEM / foreign principal and their Indian agent and their mutual interest in the business. All services to be rendered by agent/ associate, whether of general nature or in relation to the particular contract, must be clearly stated by the foreign supplier/ Indian agent. Any payment, which the agent or associate receives in India or abroad from the OEM, whether as commission or as a general retainer fee should be brought on record in the Agreement and be made explicit in order to ensure compliance to laws of the country.

iv. Any agency commission to be paid by BHEL to the Indian agent shall be in Indian currency only.

v. Tax deduction at source is applicable to the agency commission paid to the Indian agent as per the prevailing rules.

vi. In the absence of any agency agreement, BHEL shall not deal with any Indian agent (authorized representatives / associate / consultant, or by whatever name called) and shall deal directly with the foreign principal only for all correspondence and business purposes.

vii. The "Guidelines for Indian Agents of Foreign Suppliers" enclosed at annexure –'A' shall apply in all such cases.

viii. The supply and execution of the Purchase Order (including indigenous supplies/ service) shall be in the scope of the OEM/ foreign principal. The OEM/ foreign principal should submit their offer inclusive of all indigenous supplies/ services and evaluation will be based on 'total cost to BHEL'. In case OEM/ foreign principal recommends placement of order(s) towards indigenous portion of supplies/ services on Indian supplier(s)/ agent on their behalf, the credentials/ capacity/ capability of the Indian supplier(s)/ agent to make the supplies/ services shall be checked by BHEL as per the extant guidelines of Supplier Evaluation, Approval & Review Procedure (SEARP), before opening of price bids. In this regard, details may be checked as per Annexure-B (copy enclosed). It will be the responsibility of the OEM/ foreign principal to get acquainted with the evaluation requirements of Indian supplier/ agent as per SEARP available on www.bhel.com.

The responsibility for successful execution of the contract (including indigenous supplies/ services) lies with the OEM/ foreign principal. All bank guarantees to this effect shall be in the scope of the OEM/ foreign principal.

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Vendor's Signature with Seal

Annexure-A

Guidelines for Indian Agents of Foreign Suppliers

1.0 There shall be compulsory registration of agents for all Global (Open) Tender and Limited Tender. An agent who is not registered with BHEL shall apply for registration in the registration form in line with SEARP.

1.1 Registered agents will file an authenticated Photostat copy duly attested by a Notary Public/Original certificate of the Principal confirming the agency agreement and giving the status being enjoyed by the agent and the commission/ remuneration/ salary/ retainership being paid by the principal to the agent before the placement of order by BHEL.

1.2 Wherever the Indian representatives have communicated on behalf of their principals and the foreign parties have stated that they are not paying any commission to the Indian agents, and the Indian representative is working on the basis of salary or as retainer, a written declaration to this effect should be submitted by the party (i.e. Principal) before finalizing the order.

2.0 Disclosure of particulars of agents/ representatives in India, if any.

2.1 Tenderers of Foreign nationality shall furnish the following details in their offers:

2.1.1 The Bidder(s)/ Contractor(s) of foreign origin shall disclose the name and address of the agents/ representatives in India if any and the extent of authorization and authority given to commit the Principals. In case the agent/ representative be a foreign Company, it shall be confirmed whether it is existing Company and details of the same shall be furnished.

2.1.2 The amount of commission/ remuneration included in the quoted price(s) for such agents/ representatives in India.

2.1.3 Confirmation of the Tenderer that the commission/ remuneration, if any, payable to his agents/ representatives in India, may be paid by BHEL in Indian Rupees only.

2.2 Tenderers of Indian Nationality shall furnish the following details in their offers:

2.2.1 The Bidder(s)/ Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any, indicating their nationality as well as their status, i.e. whether manufacturer or agents of manufacturer holding the Letter of Authority of the Principal specifically authorizing the agent to make an offer in India in response to tender either directly or through the agents/ representatives.

2.2.2 The amount of commission/ remuneration included in the price (s) quoted by the Tenderer for himself.

2.2.3 Confirmation of the foreign principals of the Tenderer that the commission/ remuneration, if any, reserved for the Tenderer in the quoted price(s), may be paid by BHEL in India in equivalent Indian Rupees on satisfactory completion of the Project or supplies of Stores and Spares in case of operation items.

2.3 In either case, in the event of contract materializing, the terms of payment will provide for payment of the commission/ remuneration, if any payable to the agents/ representatives in India in Indian Rupees on expiry of 90 days after the discharge of the obligations under the contract.

2.4 Failure to furnish correct and detailed information as called for in paragraph 2.0 above will render the concerned tender liable to rejection or in the event of a contract materializing, the same liable to termination by BHEL. Besides this there would be a penalty of banning business dealings with BHEL or damage or payment of a named sum.

—x—

ANNEXURE - II
LIST OF INTERNATIONAL GATEWAY AIRPORTS

For air based consignment, terms of delivery will be on FCA basis from following listed airports only. Vendors are requested to verify this list for use before submission of offer.

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
DO6	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 – III

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 - 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 IFSC Code(applicable for NEFT)
8 Bank IFSC code(applicable for RTGS) (Indian Financial System Code)

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 / transfering 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 Querry, please call concerned purchase executive.

ANNEXURE - V

PRESENT PROCEDURE FOR SALE IN TRANSIT (HIGH SEA SALES)

In case of High Sea Sales, vendor should submit following documents:

1. **ORIGINAL HIGH SEA SALES AGREEMENT**
   - Sale agreement (on Rs. 200/- non-judicial stamp paper & notarised with 2 witnesses with identity) has to be signed between BHEL and the Party importing material. The date of the sale documents should be in between the date of House Air Way Bill / Bill of Lading and before landing of the goods in Indian origin.
   - Following shall be included in the High Sea Sales Agreement:
     "THE BUYER ALSO UNDERTAKE DISCHARGES, THE OBLIGATION AND FULFILLMENT OF CONDITIONS, IF ANY, ATTACHED TO THE IMPORTATION, ASSESSMENT AND CLEARANCE OF THE GOODS IN TERMS CUSTOMS TARIFF ACT 1975, THE CUSTOMS ACT 1962 & RULES & REGULATIONS MADE THERE UNDER AND OTHER RELEVANT ACTS, ORDERS, NOTIFICATIONS".

2. **ORIGINAL INVOICES: INDIGENOUS RUPEE INVOICE & FOREIGN CURRENCY INVOICE**
   - Prices should be C.I.F., designated airport/seaport basis.
   - I.E.C., C.S.T., K.S.T. Nos. to be mentioned.
   - Description of item (Nomenclature), Unit & Quantity in both the Foreign Currency & the Indigenous Invoice in Rupee shall be exactly as per Purchase Order Description of item, Quantity and Unit. The Indigenous Invoice value shall be exactly as per Purchase Order value.
   - Seller should give Foreign Currency Invoice from the original consignor. The Foreign Currency Invoice value should be at least 2% (two per cent) less than the Indigenous Rupee Invoice value in equivalent foreign currency.

4. **ORIGINAL HOUSE AIR WAY BILL/ BILL OF LADING**
   - The sale agents should duly endorse House Air Way Bill (HAWB) for air shipments or original Bill of Lading (O.B.L.) for sea shipments and Foreign Currency Invoice in favour of BHEL-EDN.

5. **ORIGINAL CARGO ARRIVAL NOTICE FROM FORWARDER.**

6. **ORIGINAL DELIVERY ORDER ISSUED IN NAME OF BHEL-EDN.**

7. **ORIGINAL PACKING LIST.**

8. **A LETTER TO THE COMMISSIONER OF CUSTOMS FOR EFFECTING ABOVE SALE.**

9. **A LETTER TO THE DEPUTY ASSESSOR (OCTROI) FOR EFFECTING ABOVE SALE IN FAVOUR OF BHEL.**

REMARKS: In case vendor needs any clarifications on the above, the same may be sought in writing.

ELECTRONICS DIVISION, BANGALORE

Annexure-VI

BHEL MEMBER BANKS (LIST OF CONSORTIUM BANKS)

Bank Guarantee (BG) shall be issued from the following banks only:

Sl. No.	Nationalised Banks	Sl. No.	Public Sector Banks
1	Allahabad Bank	18	IDBI
2	Andhra Bank		
3	Bank of Baroda	Sl. No.	**Foreign Banks**
4	Canara Bank	19	CITI Bank N.A
5	Corporation Bank	20	Deutsche Bank AG
6	Central Bank	21	The Hongkong and Shanghai Banking Corporation Ltd. (HSBC)
7	Indian Bank	22	Standard Chartered Bank
8	Indian Overseas Bank	23	J P Morgan
9	Oriental Bank of Commerce		
10	Punjab National Bank	**Sl. No.**	**Private Banks**
11	Punjab & Sindh Bank	24	Axis Bank
12	State Bank of India	25	The Federal Bank Limited
13	Syndicate Bank	26	HDFC Bank
14	UCO Bank	27	Kotak Mahindra Bank Ltd
15	Union Bank of India	28	ICICI Bank
16	United Bank of India	29	IndusInd Bank
17	Vijaya Bank	30	Yes Bank

Note:

- All BGs must be issued from BHEL consortium banks listed above.
- This list is subject to changes. Hence vendors are requested to check this list every time before issuing BGs.
- Bank Guarantees issued by Co-operative Banks/Financial Institutions cannot be accepted under any circumstance.

Annexure-VII

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of Bharat Heavy Electricals Limited (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 _____[1] through its Unit at.....(name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) with its registered office at_____[2] hereinafter referred to as the ' Vendor / Contractor / Supplier ', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated .....[3] valued at Rs.....[4] (Rupees ----------)/FC.....(in words.....) for .....[5] (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank 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 any sum or sums upto a maximum amount of Rs -- ---------- [6] (Rupees ----------) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

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 Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, 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 Vendor / Contractor / Supplier shall have no claim against us for making such payment.

We the .....bank 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/satisfactory completion of the performance guarantee period as per the terms of the 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 Vendor / 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 Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / 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 Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier 's liabilities.

This Guarantee shall remain in force upto and including..... [7] 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 Vendor / 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 the .....[8]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..... [6]
b) This Guarantee shall be valid up to .....[7]
c) Unless the Bank is served a written claim or demand on or before _____[8] 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] *CONTRACT VALUE*

[5] *PROJECT/SUPPLY DETAILS*

[6] *BG AMOUNT IN FIGURES AND WORDS*

[7] *VALIDITY DATE*

[8] *DATE OF EXPIRY OF CLAIM PERIOD*

Annexure – VIII
(Applicable only for MSE Suppliers)

Certificate by Chartered Accountant on letterhead

This is to certify that M/s. _____ (hereinafter referred to as 'enterprise') having PAN Number _____and UDYAM Registration Number _____, registered office at _____ is falling under the category _____ (**Micro / Small / Medium**) under MSMED Act 2006. (Copy of UDYAM Registration Certificate to be enclosed).

The said classification of _____ (**Micro / Small / Medium**) is arrived at based on the Notifications / guidelines / clarifications issued under Micro, Small and Medium Enterprises Development Act, 2006 including the notification S.O.2119 (E) dated 26th June 2020.

The Investment of the enterprise in Plant and Machinery or Equipment as at 31st March'2020 as per Clause - 4 of the Notification is _____ (Rupees in Lakhs).

The turnover of the Enterprise for the period ending 31st March 2020 as per Clause - 5 of the Notification is _____ (Rupees in Lakhs).

Date:

(Signature) Name-
Membership number-

Seal of Chartered Accountant with UDIN reference

Annexure-X

Restrictions under Rule 144(xi) of General Financial Rules, 2017 amendment dt: 23.07.2020

I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.

II. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.

III. "Bidder from a country which shares a land border with India" for the purpose of this Order means :-

a. An entity incorporated, established or registered in such a country; or

b. A subsidiary of an entity incorporated, established or registered in such a country; or

c. An entity substantially controlled through entities incorporated, established or registered in such a country; or

d. An entity whose *beneficial owner* is situated in such a country; or

e. An Indian (or other) agent of such an entity; or

f. A natural person who is a citizen of such a country; or

g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above

IV. The *beneficial owner* for the purpose of (iii) above will be as under:

1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.

Explanation--

a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent of shares or capital or profits of the company;

b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;

2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;

3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;

4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;

5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

ಭಾರತ್ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್
भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited
(A Government of India Undertaking)
ELECTRONICS DIVISION
P. B. No. 2606, Mysore Road, Bengaluru - 560 026

SCPV: BOS: GCC- Rev 04

GENERAL COMMERCIAL CONDITIONS FOR CONTRACT

These 'General Commercial Conditions for Contract for Purchase' herein after 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.

Order of Precedence:

In case of any inconsistency or contradiction between any of the documents, the order of precedence shall be Purchase Order, LOI / LOA, Special Conditions of Contract and General Conditions of Contract for commercial conditions; and specific agreement on technical conditions, RFQ/offer and specification for Technical Conditions.

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 permitted for and agreed up on by BHEL in writing in the PO. In case Price variation/ Exchange rate variation clause if applicable, the same will be mentioned in Special Conditions of Contract (SCC), otherwise firm price only.

2. **Ordering and confirmation of Order:** Vendor shall send the order acceptance on their company letter head/ through e-mail within 1 (ONE) week from the date of receipt 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 1 (ONE) week (or the time limit as specified/agreed by BHEL) from the date of receipt of the purchase order.

3. **Documentation:** After receipt of Purchase Order, vendor should submit necessary documents (if & as applicable) like drawings specified, 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.

4. **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 issue of Manufacturing clearance along with approved document. 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 supply 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. **GST as applicable will be recovered along with penalty amount.**

5. **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 the basis for 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.

6. **Pre Shipment Inspection:** Prior written notice of at least 10 days shall be given along with internal test certificates/Certificate of Conformance (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. **BHEL reserves the right for conducting repeat test, if required.**

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.

7. **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 *(as mentioned in dispatch instructions issued by BHEL)* 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 *(Email communication to Insurance Agency must be "CC" to BHEL)*. 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.

8. **Mode of dispatch:**

   Indigenous Scope: By road on Door Delivery Consignee Copy attached basis through your approved transporter (unless otherwise indicated in Dispatch Instructions), only on receipt of Despatch Clearance from BHEL.

   Imported Scope: By Air/Sea through BHEL approved Freight Forwarder/supplier approved Consolidator respectively as per agreed contractual terms, only on receipt of Dispatch Clearance from BHEL.

9. **Changes in Statutory levies:**

   If any rates of Tax are increased or decreased, a new Tax is introduced, an existing Tax is abolished, or any change in interpretation or application of any Tax occurs in the course of the execution of Contract, which was or will be assessed on the bidder in connection with performance of the Contract, an equitable adjustment of the Contract Price shall be made to fully take into account any such change by addition to the Contract Price or deduction there from, as the case may be. However, these adjustments would be restricted to direct transactions between BHEL and the bidder /agent of foreign bidder (if applicable). These adjustments shall not be applicable on procurement of raw materials, intermediary components etc. by the bidder /agent.

10. **Availing duty/tax exemption benefits by bidder, wherever applicable:** BHEL shall issue the required Certificate/s, as per relevant policies of the Govt. of India, to facilitate the bidders to avail any such benefits under the Contract. In case of failure of the bidders to receive the benefits partly or fully from the Govt. of India and/or in case of any delay in receipt of such benefits, BHEL shall neither be liable nor responsible in any manner whatsoever.

11. **Taxes against sub-vendor dispatches:** All taxes/levies, as applicable in respect of all components, equipment and material to be dispatched directly from the sub-vendor's works to Site irrespective of the fact whether such taxes and levies are assessable and chargeable on Vendor or the BHEL, shall be to the vendor's account and no separate claim in this regard will be entertained by BHEL.

12. **High Sea Sales (HSS):** Customs clearance of the consignment landed on Indian Sea/Air ports will be done by BHEL based on the original HSS documents provided by vendors.

    Any delay in submission of complete/correct HSS documents to BHEL may incur demurrage charges. All demurrage charges on account of incomplete /incorrect HSS

documents submission by vendor will be to vendor's account and all such charges will be recovered from any of the available vendor bills with BHEL.

13. **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 Phytosanitory / 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 in the packing list.

    Separate packing & identification of items should be as follows.

    (a) Main Scope - All items must be tagged with part no. & item description.
    (b) Commissioning accessories/spares - All items must be tagged with part no. & item description.
    (c) Mandatory spares - All items must be tagged with part no. & item description.

    Nevertheless, vendor shall adhere to dispatch & packing instructions issued by BHEL at the time of dispatch. Approximate Package Dimension shall be indicated in Offer/Quotation _____L (ft) x ___B (ft) x ___H (ft). Any Over Dimensional Consignment (ODC) in any consignment dimension ___40__L (ft) x __8_B (ft) x __8_H (ft) the same shall be indicated in offer.

14. **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.

15. **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.

16. **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 any specified 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.

17. **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.

18. **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.

19. **Shortages:** In the event of shortage on receipt of goods and/or on opening of packages at site, all such shortages, *caused by supplier's act or omission*, shall be made good at *free of cost* within a reasonable time that BHEL may allow from such intimation.

    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. *In case BHEL raises an insurance claim, the cost of material limited to insurance settled amount less handling charges will be reimbursed to supplier.*

20. **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.

21. **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.

22. **Product Information, Drawings and Documents:** All specified 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.

23. **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 nonexclusive, 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.

24. **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.

25. Warranty:

Wherever required, and so provided in the specifications/ Purchaser Order, the Seller shall ensure that the goods supplied shall comply with the specifications laid down, for materials, workmanship and performance.

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 Vendor, including arranging supply of goods from elsewhere at sole risk and cost of Vendor.

Unless otherwise specified in SCC, warranty period shall be applicable for a period of 24 months from the date of delivery of goods or 18 months from the date of commissioning of goods, whichever is earlier. The warranty period as described above shall apply afresh to replaced, repaired or re-executed parts of a delivery. Unless otherwise specifically provided in the Purchase Order, Vendor's liability shall be co terminus with the expiration of the applicable warranty period.

26. 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 willful 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.

27. Liability during Warranty: Vendor shall arrange replacement / repair of all the defective materials / services under its obligation during the 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 Warranty period or where the commissioning call is issued within the warranty period, vendor shall be responsible for replacement/ repair of the goods as required by BHEL at vendor's cost even after expiry of warranty period.

Further if the equipment or any part thereof cannot be used by reason of such defect and/or making good of such defect, the warranty period of the equipment or such part, as the case may be, shall be extended by a period equal to the period during which the equipment or such part cannot be used by BHEL because of any of the aforesaid reasons. Upon correction of the defects in the facilities or any part thereof by repair/replacement, such repair/replacement shall have the warranty period for a

period of twelve (12) months from the time such replacement/repair of the equipment or any part thereof has been completed.

28. **Liability after warranty period:** At the end of the warranty, the Vendor's liability ceases except for latent defects. For the purpose of this clause, latent defects shall be the defects inherently lying within the material or arising out of design deficiency which do not manifest themselves during the warranty Period, but later. The Contractor's liability for latent defects warranty for the equipment including spares shall be limited to a period of six months from the end of the warranty period of the respective equipment including spares or first time commissioning, whichever is later but not later than one (01) year from the date of expiry of warranty period.

29. **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, licenses 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.

30. **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).

31. **Arbitration Clause in case of Contract with vendors other than Public Sector Enterprise (PSE) or a Government Department:**

ARBITRATION & CONCILIATION

The parties shall attempt to settle any disputes or difference arising out of the formation, breach, termination, validity or execution of the Contract; or, the respective rights and liabilities of the parties; or, in relation to interpretation of any provision of the Contract; or, in any manner touching upon the Contract, or in connection with this contract through friendly discussions. In case no amicable settlement can be reached between the parties through such discussions, in respect of any dispute; then, either Party may, by a notice in writing to the other Party refer such dispute or difference to the sole arbitration of an arbitrator appointed by Head of the BHEL–EDN. Such Sole Arbitrator appointed, shall conduct the arbitration in English language.

The Arbitrator shall pass a reasoned award and the award of the Arbitration shall be final and binding upon the Parties.

Subject as aforesaid, the provisions of Arbitration and Conciliation Act 1996 (India) or statutory modifications or re-enactments thereof and the rules made thereunder and for the time being in force shall apply to the arbitration proceedings under this clause. The seat of arbitration shall be Bangalore. The cost of arbitration shall be borne as decided by the Arbitrator upon him entering the reference. Subject to the Arbitration Clause as above, the Courts at Bangalore alone shall have exclusive jurisdiction over any matter arising out of or in connection with this Contract.

Notwithstanding the existence or any dispute or differences and/or reference for the arbitration, the parties shall proceed with and continue without hindrance the performance of its obligations under this Contract with due diligence and efficiency in a professional manner except where the Contract has been terminated by either Party in terms of this Contract.

Arbitration Clause in case of Contract with a Public Sector Enterprise (PSE) or a Government Department:

In the event of any dispute or difference relating to the interpretation and application of the provisions of the Contract, such dispute or difference shall be referred by either party for Arbitration to the Sole Arbitrator in the Department of Public Enterprises to be nominated by the Secretary to the Government of India in-charge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 shall not be applicable to arbitration under this clause. The award of the Arbitrator shall be binding upon the parties to the dispute, provided, however, any Party aggrieved by such Award may make further reference for setting aside or revision of the Award to the Law Secretary, Department of Legal Affairs, Ministry of Law and Justice, Government of India. Upon such reference the dispute shall be decided by the Law Secretary or the Special Secretary or Additional Secretary when so authorized by the Law Secretary, whose decision shall bind the Parties hereto finally and conclusively. The Parties to the dispute will share equally the cost of arbitration as intimated by the Arbitrator.'

32. **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.

33. **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.

(a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/Contractors are handled in a fair, transparent and corruption free manner. A panel of Independent External Monitors
(IEMs) have been appointed to oversee implementation of IP in BHEL.The IP as enclosed with the tender (total 7 sheets) is to be submitted (duly signed by authorized signatory who signs in the offer) along with technocommercial bid. Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.Details of IEM for this tender is furnished below:Sh Virendra Bahadur Singh, IPS (Retd.) and Sh. Arun Chandra Verma, IPS
(Retd.)(b) Please refer Section-8 of the IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to the IEM mentioned inthe tender. No routine correspondence shall be addressed to the IEM(phone/post/email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification/issues shall be addressed directly to the tender issuing
(procurement)
department

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi – 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for

_____

_____

_____. The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 – Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principle:-

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 – Commitments of the Bidder(s)/ Contractor(s)

2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender

process or the execution of the contract or to any third person any material, immaterial or any other benefit which he / she is not legally entitled to, in

order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant IPC/ PC Act; further 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 the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

2.1.4 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.

2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 – Disqualification from tender process and exclusion from future Contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidders(s)/ Contractor(s) from the

tender process or take action as per the separate "Guidelines for Suspension of Business Dealings with Suppliers/ Contractors" framed by the Principal.

Section 4 – Compensation for Damages

4.1 If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.

4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

Section 5 – Previous Transgression

5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 – Equal treatment of all Bidders/ Contractors/ Sub-contractors

6.1 The Bidder(s)/ Contractor(s) undertake(s) to demand from his sub-contractors a commitment consistent with this Integrity Pact. This commitment shall be taken only from those sub-contractors whose contract value is more than 20% of Bidder's/ Contractor's contract value with the Principal.

6.2 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.

6.3 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 – Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 –Independent External Monitor(s)

8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.

8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality.

8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

8.5 As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or

take corrective action, or heal the situation, or to take other relevant action. The Monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

8.6 The Monitor will submit a written report to the CMD, BHEL within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.

8.7 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.

8.8 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant IPC / PC Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.9 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.

8.10 The word ‘Monitor’ would include both singular and plural.

Section 9 – Pact Duration

9.1 This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the respective contract and for all other Bidders 6 months after the contract has been awarded.

9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 – Other Provisions

10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.

10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders/ contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

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For & On behalf of the Principal (Office Seal)	For & On behalf of the Bidder/ Contractor (Office Seal)

Place----------
Date----------

Witness: _____	Witness: _____
(Name & Address) _____	(Name & Address)_____
_____	_____

MINISTRY OF MICRO, SMALL AND MEDIUM ENTERPRISES

NOTIFICATION

New Delhi, the 26th June, 2020

S.O. 2119(E).—In exercise of the powers conferred by sub-section (1) read with sub-section (9) of section 7 and sub-section (2) read with sub-section (3) of section 8, of the Micro, Small and Medium Enterprises Development Act, 2006, (27 of 2006), hereinafter referred to as the said Act, and in supersession of the notifications of the Government of India in the Ministry of Micro, Small and Medium Enterprises number S.O.1702 (E), dated the 1st June, 2020, S.O. 2052 (E), dated the 30th June, 2017, S.O.3322 (E), dated the 1st November, 2013 and S.O.1722 (E), dated the 5th October, 2006, published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-Section (ii), except as respects things done or omitted to be done before such supersession, the Central Government, after obtaining the recommendations of the Advisory Committee in this behalf, hereby notifies certain criteria for classifying the enterprises as micro, small and medium enterprises and specifies the form and procedure for filing the memorandum (hereafter in this notification to be known as "Udyam Registration"), with effect from the 1st day of July, 2020, namely:--

1. **Classification of enterprises.**-An enterprise shall be classified as a micro, small or medium enterprise on the basis of the following criteria, namely:--

   (i) a micro enterprise, where the investment in plant and machinery or equipment does not exceed one crore rupees and turnover does not exceed five crore rupees;

   (ii) a small enterprise, where the investment in plant and machinery or equipment does not exceed ten crore rupees and turnover does not exceed fifty crore rupees; and

   (iii) a medium enterprise, where the investment in plant and machinery or equipment does not exceed fifty crore rupees and turnover does not exceed two hundred and fifty crore rupees.

2. **Becoming a micro, small or medium enterprise.--**

   (1) Any person who intends to establish a micro, small or medium enterprise may file Udyam Registration online in the Udyam Registration portal, based on self-declaration with no requirement to upload documents, papers, certificates or proof.

   (2) On registration, an enterprise (referred to as "Udyam" in the Udyam Registration portal) will be assigned a permanent identity number to be known as "Udyam Registration Number".

   (3) An e-certificate, namely, "Udyam Registration Certificate" shall be issued on completion of the registration process.

3. **Composite criteria of investment and turnover for classification.--**

   (1) A composite criterion of investment and turnover shall apply for classification of an enterprise as micro, small or medium.

   (2) If an enterprise crosses the ceiling limits specified for its present category in either of the two criteria of investment or turnover, it will cease to exist in that category and be placed in the next higher category but no enterprise shall be placed in the lower category unless it goes below the ceiling limits specified for its present category in both the criteria of investment as well as turnover.

   (3) All units with Goods and Services Tax Identification Number (GSTIN) listed against the same Permanent Account Number (PAN) shall be collectively treated as one enterprise and the turnover and investment figures for all of such entities shall be seen together and only the aggregate values will be considered for deciding the category as micro, small or medium enterprise.

4. **Calculation of investment in plant and machinery or equipment.--**

   (1) The calculation of investment in plant and machinery or equipment will be linked to the Income Tax Return (ITR) of the previous years filed under the Income Tax Act, 1961.

SEAWORTHY PACKING
(PACKING INSTRUCTIONS FOR GENERAL COMPONENTS / ASSEMBLIES / EQUIPMENT)

1 GENERAL

This standard lays down packing instructions for seaworthy packing of Components /Assemblies/ Equipment to be dispatched against Customer's contracts, for which there are no special instructions issued by the Engineering Departments.

The Components/Assemblies need to be packed suitably to avoid physical damage & corrosion during transit for storage. For specific applications the concerned engineering department shall issue a product standard. Reference of this standard, must appear in the Shipping list/Packing List.

2 SCOPE

This procedure gives minimum guidelines for seaworthy packing to be complied with for packing of Components /Assemblies / Equipment. This packing shall be suitable for different handling operations and for the adverse conditions during transportation and during indoor / outdoor storage for periods more than one year.

3 CROSS REFERRED SPECIFICATION

- Multi-layered cross laminated plastic film : AA51420
- Packing Wood : AA51401
- Silica gel : AA55619
- Thermocole : AA51416
- Packing slip holders : AA7240901
- Corrugated Fibre Board : AA51414
- Rubber sheet : AA59001
- VCI paper : AA51406
- High quality full glossy out door finishing paint : AA56126
- Polyethylene air bubble film : IS 12787
- Structural steel - standard quality (plates, sections, strips flats & bars) : AA10108
- International Standards For Phytosanitary Measures No. 15 : ISPM-15:2009

4 WOOD SPECIFICATION FOR PACKING

The wood shall conform to specification AA51401.

For export packing wood in addition to the above the following has to be met:

The standard requires the use of debarked wood in the construction of compliant wood packaging material. Debarked wood is defined in the ISPM 5.

5 TYPE OF PACKING

The following 5 types of packings have been standardized for packing of General Components /Assemblies.

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– 'OP' - Open Type
– 'PP' - Partially Packed
– 'CP' - Crate Packing - Components/Equipment requiring physical protection
– 'CQ' - Case Packing - Small medium Components/ Assemblies/ Equipment which require corrosion & physical protection
– 'CR' - Case Packing - Electrical Components/Assemblies which require special packing viz. Water Proof, Shock Proof, etc.

6 DESCRIPTION OF TYPES OF PACKING

The various types of packing, as standardized above, are described below.

6.1 'OP' - Open Type

In case, of components which are not affected by water & dust & do not require special protection &, are generally not machined, shall be sent as open packages. However these components may be sent in crates, wherever necessary.

6.2 'PP' - Partially Packed

Components which need special protection, at selected portions only, shall be dispatched partially packed. Machined surfaces should not be allowed to come directly in contact with the wood. Such surfaces after application of TRP should be protected with Multi-layered cross laminated plastic film to AA51420.

6.3 'CP' - Crate Packing – General

Assemblies/Components which need only physical protection from the point of view of handling shall be dispatched duly packed in crates.

6.4 'CQ' - Case Packing - Machined Components/Assemblies/Equipment

a) Small & Medium sized components/assemblies/equipment due to size/weight & to avoid handling, and pilferage, problems shall be packed in Case/Containers.

b) Wherever required adequate quantity of silica gel to AA55619 or VCI Powder/ Tablets, packed in thin muslin cloth cotton bags shall be suitably placed.

c) Small machines/components of less weight shall be provided with suitable cushioning. Wood Wool/Expanded Polyethylene Foam Sheet, if used, shall be sandwiched between polyethylene sheets and sealed.

d) The components inside the case shall be entirely covered with Multi-layered cross laminated plastic film to AA51420, where-ever required.

6.5 'CR' - Case Packing - Electrical & Electronic Components/Assemblies

Delicate components likely to be damaged e.g. Gauges, Instruments etc. are to be wrapped in waxed paper or polyethylene air bubble film and packed in cartons.

a) Adequate quantity of Silica gel to AA55619 packed in cotton bags, of 100 grams each are to be suitably placed in the cartons. The cartons shall be entirely covered with Multi-layered cross laminated plastic film to AA51420, before being packed in the cases.

b) VCI Powder/Tablets can be used as an alternative to Silica Gel to AA55619.

c) Empty space in the cartons shall be filled with small chips of Expanded Polystyrene (Thermocole), Wood Wool etc. Polyethylene air bubble film shall conform to IS 12787/AA51420 Expanded polystyrene (Thermocole) shall conform to AA51416.

d) The cartons shall be manufactured from corrugated Fibre Board, meeting requirements of AA51414.

6.6 Special Packing

Components requiring special packing (as per customer/contractual/ engineering requirements) not included in this specification shall be covered by product standards.

7 PREPARATION OF PACKING CASE

1) Cases and crates with gross weight up to 1,000 kgs. shall be provided with bottom cleats of min. 40 mm thicknesses to ensure clearance for handling by forklift. Cases and crates exceeding gross weight of 1,000 kgs. shall be provided with skid runners, number and size according to weight of package.
2) The base of the case shall be made of wooden batons for planks giving necessary reinforcement, such that the bottom of the equipment is at a height of 100 to 200 mm from the ground level depending upon size & weight of equipment. However for packing cases of smaller size equipment can be at a height of 40 mm from the ground level.
3) In case of 'CR1 - Packing Viz. Electrical & Electronic components for instruments/assemblies, a rubber sheet, Self-expanded polyethene foam sheet, preferably 10 mm thick, shall be fixed on to the base to act as cushioning to the equipment.
4) The four sides, shall be lined, from inside with multi-layered cross-laminated polyethylene sheet of 90GSM as per AA51420 and tacked at suitable places.

   Whenever specified the top cover will have a layer of multi-layered cross laminated polyethylene sheet of 90 GSM over the cover. This should project about 100 - 250mm on all sides.

   It is preferable to have a single piece of the above Multi-layered cross laminated polyethylene sheet fixed on the four sides. In case jointing is unavoidable, it should be done by overlapping of approximately 100mm.
5) Place the Components/cartons with corrosion inhibitors duly applied wherever necessary for place suitably, thin muslin cloths bags containing 100 grams (approx.) of activated Blue Silica Gel to AA55619, wherever necessary. Alternatively VCI Powder or Tablet may be used.
6) In case, depression is formed, at the top, after the equipment is lowered, provide ply board/wooden batons.
7) Cover the whole equipment with polyethylene sheet of at least 100 micron thickness, on all sides preferably by a single piece.
8) For indoor panels/equipment, provide suitable packing batons with covering of Thermocole/expanded soft polyethylene foam/polyethylene air bubble film wrapped with suitable cords, to avoid cutting of the polyethylene sheet so that finished surface is not damaged.
9) Empty space in the box shall be filled with adequate cushioning material e.g. Thermocole Chips, Wood Wool etc. to avoid movement for shocks. Alternatively put wooden blocks/batons wherever necessary.
10) The inner side of the top cover shall be lined with polyethylene sheet, of at least
11) 100 micron thickness, which shall project approximately 25 to 150 mm depending upon the size of the case on all sides of the top cover shall be provided below the top cover. This projection, after nailing the top cover, shall be folded over, on the sides of the crates & tacked, to, prevent ingress of water from the top.
12) For specific requirement of packing the cases are to be provided with Tongue and Groove joints.

8 STEEL CONTAINERS

Steel containers for packing can be used in case of repeated supplies of the same equipment. Empty steel containers are to be returned back from customer's end and to be reused for the next supplies.

The containers are to be made of structural steel as per AA10108 with proper reinforcement with I, C and T Sections.

Following precautions are to be taken during packing:

– Put the Components/Assemblies/Equipment in the steel container properly. Cover the Components/Assemblies/Equipment with polythene.

– To arrest the movement in the steel container necessary wooden Blocks/Batons may be put.

– Put cover on steel, container and Bolt Properly.

9 SEALED PACKING

Components sub-assemblies and assemblies sensitive to climatic conditions shall be packed seal tight. All the openings of the sensitive components, sub-assemblies and assemblies shall be blanketed to prevent the ingress of dust and moisture.

The components sub-assemblies and assemblies are completely covered with 2 layers of polyethylene sheet. All sharp corners and edges are to be protected by rubber mats to prevent the polyethylene sheet from damage. Top surface of the case shall be free from dents to prevent rain water pockets.

10 SLING PLATE

Sling plate shall be provided to prevent damage to the packing box during lifting. Size of the sling plate shall be selected depending upon the net weight of the consignment.

11 PACKING SLIP HOLDERS

Two nos. steel packing slip holders, specification no. AA7240901 containing the packing list, sealed in thick polyethylene film, shall be fixed one inside and the other outside the packing box.

12 Volatile Corrosion Inhibitor (VCI) Paper

a) Un-protected surfaces of steel and cast iron components, tools bearing, shaft seals etc. are covered with VCI paper. VCI paper has been impregnated with corrosion inhibitors which by evaporation and chemical conversion protect metals in an enclosed area against corrosion.

b) 7 m^3 VCI paper is necessary for 1 m^3 of packed item approximately as per AA51406.

Application Limitation:

VCI paper shall not be used for components made of aluminium, aluminium alloys as well as Zinc, copper, brass, cadmium and silver.

VCI powder is sprinkled inside the piping components ends shall be protected with end cover as specified in plant standards, drawings.

13 Moisture Absorber

Silica gel is used for this purpose to protect the contents over sufficiently long time from corrosion. At the time of use, silica gel should be so dried that its colour becomes dark blue. These shall be filled in small cotton bags. Before sealing the equipment, the silica gel bags should be kept inside the polyethylene film cover at different locations. The quantity of silica gel should not be less than 1.0 kg per cubic metre volume of the packing box

14 GENERAL PRECAUTIONS

a) While fixing nails during packing, necessary care shall be taken to ensure that materials used for protection inside the case e.g. paper, polyethylene sheet, coir etc. do not get damaged.

b) Sling protection brackets to be provided on cases wherever required.

c) It shall be ensured that all stencil marks external, front & rear sides of the casing shall be of water proof Material to prevent obliteration in transit.

d) The various caution signs shall be marked with stencil on both sides of the packing box.

e) Do not pack any other Mechanical items with this case (do not use any other non-permitted packing materials).

THE FOLLOWING DETAILS ARE TO BE MARKED ON THE PACKING CASES.

a) Address of consignee.

b) Purchase Order No./ SO No/WO No.

c) Description of item or title of packing list.

d) Case identification Number/ Packing List No.

e) Net Weight.

f) Gross Weight.

g) Dimensions of box

h) Marking showing upright position.

i) Marking showing sling position.

j) Marking showing umbrella (i.e. for machines/components to be stored under covered storage.

k) Loading and unloading precautions

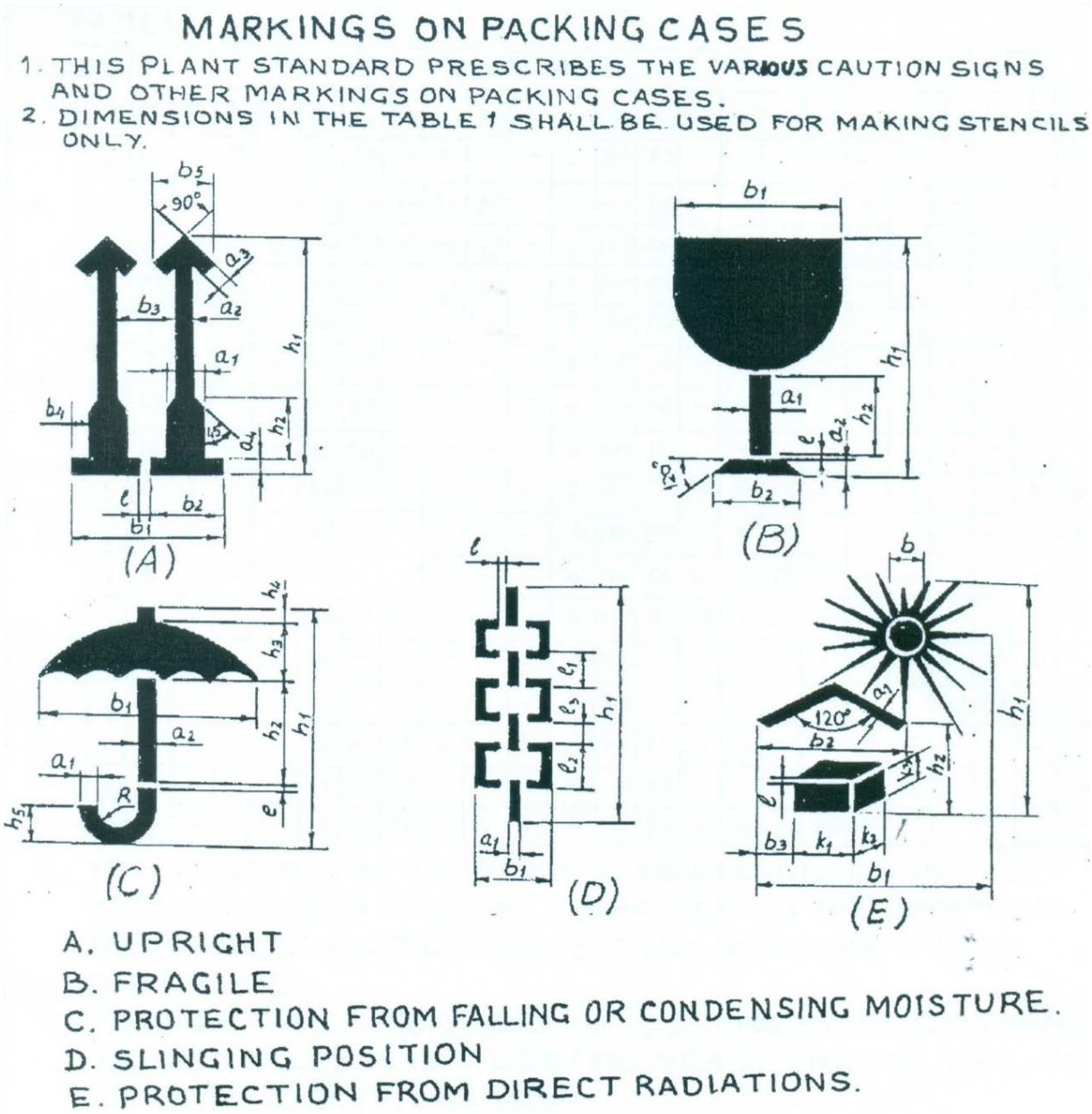


Figure 1

CENTER OF GRAVITY

Figure 2

Table 1

DESIGN-ATION		DIMENSIONS IN mm.																						
		a_1	a_2	a_3	a_4	b_1	b_2	b_3	b_4	b_5	b	l	h_1	h_2	h_3	h_4	h_5	K_1	K_2	K_3	l_1	l_2	l_3	R
A	1	12	5	5	4	52	25	19	8	21	–	2	84	23	–	–	–	–	–	–	–	–	–	–
	2	17	7	7	6	75	36	29	11	30	–	3	119	33	–	–	–	–	–	–	–	–	–	–
	3	24	10	10	8	104	50	38	16	42	–	4	168	46	–	–	–	–	–	–	–	–	–	–
	4	34	14	14	11	147	71	59	23	60	–	5	239	65	–	–	–	–	–	–	–	–	–	–
B	1	5	5	–	–	50	33	–	–	–	–	2	84	25	–	–	–	–	–	–	–	–	–	–
	2	7	7	–	–	71	47	–	–	–	–	3	119	36	–	–	–	–	–	–	–	–	–	–
	3	10	10	–	–	100	66	–	–	–	–	4	168	50	–	–	–	–	–	–	–	–	–	–
	4	14	14	–	–	142	94	–	–	–	–	5	239	71	–	–	–	–	–	–	–	–	–	–
C	1	4	3	–	–	66	–	–	–	–	–	2	80	39	19	5	11	–	–	–	–	–	–	6
	2	6	4	–	–	85	–	–	–	–	–	3	114	55	27	7	16	–	–	–	–	–	–	9
	3	8	6	–	–	120	–	–	–	–	–	4	160	78	38	10	22	–	–	–	–	–	–	12
	4	11	9	–	–	170	–	–	–	–	–	5	227	110	54	14	31	–	–	–	–	–	–	17
D	1	6	–	–	–	30	–	–	–	–	–	4	148	–	–	–	–	–	–	–	30	30	10	–
	2	9	–	–	–	42	–	–	–	–	–	5	209	–	–	–	–	–	–	–	42	42	14	–
E	1	3	–	–	–	69	47	10	–	–	16	2	91	26	–	–	–	17	8	11	–	–	–	–
	2	4	–	–	–	98	67	15	–	–	23	3	128	33	–	–	–	24	11	16	–	–	–	–
	3	6	–	–	–	138	94	20	–	–	32	4	182	62	–	–	–	34	16	22	–	–	–	–

Black and Red Marking Ink to IS: 1234 "Ink, Stencil, Oil Base, For Marking Porous Surfaces" or duplicating ink stencilling, oil base for marking porous surfaces.

All cases containing fragile items are to be stencilled with red marking and stencilling paint/ink.

"HANDLE WITH CARE", "FRAGILE DO NOT TURN OVER".

Besides the caution signs the product information shall be stencilled of letters with 13mm to 50mm height.

In case of consignment consists of more than one package, each package shall carry its Package No. as given in shipping list. All caution signs shall be stencilled in higher quality full glossy out door finishing paint red in colour (AA56126). All other markings shall be carried out in black enamel (AA56126).

Caution signs & other markings shall be stencilled on both the end shooks & the side shooks. Caution sign (for slinging) shall be stencilled only on side shooks at the appropriate place.

Note: In case the size of package is small for using the stencils, then hand written letters/figures shall be allowed.

15 PROCEDURE FOR HANDLING OF COMPONENTS

The purpose of this procedure is to protect the quality of the components/equipment while handling in various stages of manufacturing packing & despatching.

15.1 Adequate care shall be taken in handling the material, and components to avoid damage during receipts, storage issue manufacture & despatch operations.

15.2 Appropriate material handling equipment like fork lifters, cranes etc. Shall be used where needed.

15.3 Lifting by crane and transportation by trolley of critical items and large components like rotors castings etc. Shall be done carefully.

15.4 For critical items, where specified, special handling fixtures shall be used for lifting.

15.5 Slings and shackles used for lifting the components/equipment shall be checked for fitness and suitability before use.

15.6 Slings used on machined surfaces shall be suitably padded. No slings shall be used on journal surfaces.

15.7 Precision machined components like blades, catches, rollers etc. Shall be lifted using suitable wooden pallets.

15.8 HANDLING OF COMPONENTS ON RECEIPT/DESPATCH:

Before loading/unloading a packing case from the carrier look for the following shipping instructions painted on the packing case.

– The markings showing the upright position.

– The markings showing the sling position

– Markings showing the fragile contents.

– Other required markings as per Clause No. 12

15.8.1 Appropriate cranes and slings should be used for different components/ cases. Slings should normally make an angle as minimum as possible (width wise) but in no case more than 15º.

15.8.2 Handling and lifting should be done without jerks or impacts.

15.8.3 Immediately after receipt of the goods, the packing should be examined all-round for any sign of damage. If necessary, lift the cover or a number of boards of the case so as to make the contents visible. In the event of sealed packing being used the plastic sheeting should not be damaged. It is imperative that the packing material is restored in original condition after the inspection.

15.8.4 On receipt of the equipment it should be checked with the shipping list and missing or damage if any should be reported immediately. It is important to arrange for immediate examination to determine the extent of the damage, the cause of the damage and where applicable the person or persons responsible for the damage. According to general practice when transporting by railway or by road vehicle the carrier concerned should be immediately called upon (within specified periods) for jointly establishing a statement of the damage. This is essential as a basis for a subsequent claim and possible damage report to the insurance company.

15.8.5 Protective coating applied on machined surfaces should not be disturbed. The plastic covering should be put back carefully so that it prevents ingress of dust and moisture. Some packing may have vapour phase inhibitor (VPI) paper enclosed inside the packing cases. This should be restored to its original place as far as possible.

15.8.6 Silica gel and such other chemicals kept in the box as desiccants and indicators should also be left in the box itself.

16 GI SHEET

The packing cases are covered with GI sheet on outside for sides and top; inside for bottom as per the Figure-3 (GI sheet covering is applicable for all closed type of wooden packing).

17 Treatment of Wood & Application and use of the mark

For seaworthy export packing, treatment of wood has to be carried out as below subject to BHEL Engg & QC approval.

As per customer requirement for export packing, wood to be treated as applicable should be done as per International Standards for Phytosanitary Measures ISPM: 15 to control the growth stages viz. egg to adult of structural insects (beetles, borers, bugs, fleas, flies, lice, moths, roaches, termites) and other pests (mice, rats, spiders) etc. in stored products.

The specified marks applied to wood packaging material treated in accordance with ISPM 15 must conform to the requirements described in Annex 2 of ISPM 15.

17.1 Heat treatment using a conventional steam or dry kiln heat chamber (treatment code for the mark: HT)

When using conventional heat chamber technology, the fundamental requirement is to achieve a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood (including its core).

This temperature can be measured by inserting temperature sensors in the core of the wood. Alternatively, when using kiln-drying heat chambers or other heat treatment chambers, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations inside the heat chamber has been measured and correlated with chamber air temperature, taking into account the moisture content of the wood and other substantial parameters (such as species and thickness of the wood, air flow rate and humidity). The test series must demonstrate that a minimum temperature of 56 °C is maintained for a minimum duration of 30 continuous minutes throughout the entire profile of the wood.

Treatment schedules should be specified or approved by the National Plant Protection Organisation (NPPO). Treatment providers should be approved by the NPPO.

17.2 Heat treatment using dielectric heating (treatment code for the mark: DH)

Where dielectric heating is used (e.g. microwave), wood packaging material composed of wood not exceeding 20 cm when measured across the smallest dimension of the piece or the stack must be heated to achieve a minimum temperature of 60 °C for 1 continuous minute throughout the entire profile of the wood (including its surface). The prescribed temperature must be reached within 30 minutes from the start of the treatment.

Treatment schedules should be specified or approved by the NPPO.

17.3 Methyl bromide treatment (treatment code for the mark: MB)

Wood packaging material containing a piece of wood exceeding 20 cm in cross-section at its smallest dimension must not be treated with methyl bromide.

The fumigation of wood packaging material with methyl bromide must be in accordance with a schedule specified or approved by the NPPO (National Plant Protection Organisation) that achieves the minimum concentration-time product (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. This CT must be achieved throughout the profile of the wood, including its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must not be less than 10 °C and the minimum exposure time must not be less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24 hours from the beginning of the treatment. In the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation.

If the CT is not achieved over 24 hours, corrective action needs to be taken to ensure the CT is reached; for example, the treatment is restarted or the treatment time extended for a maximum of 2 hours without adding more methyl bromide to achieve the required CT (see the footnote to Table 2).

Table 2 – Minimum CT over 24 hours for wood packaging material fumigated with methyl bromide

Temperature (°C)	CT (g·h/m^3) over 24 h	Minimum final concentration (g/m^3) after 24 h#
21.0 or above	650	24
16.0 – 20.9	800	28
10.0 – 15.9	900	32

In circumstances when the minimum final concentration is not achieved after 24 hours, a deviation in the concentration of ~5% is permitted provided additional treatment time is added to the end of the treatment to achieve the prescribed CT.

One example of a schedule that may be used for achieving the specified requirements is shown in Table 3.

Table 3 – Example of a treatment schedule that achieves the minimum required CT for wood packaging material treated with methyl bromide (initial doses may need to be higher in conditions of high sorption or leakage)

Temperature (°C)	Dosage (g/m^3)	Minimum concentration (g/m^3) at:		
		2 h	4 h	24 h
21.0 or above	48	36	31	24
16.0 – 20.9	56	42	36	28
10.0 – 15.9	64	48	42	32

Treatment providers should be approved by the NPPO.

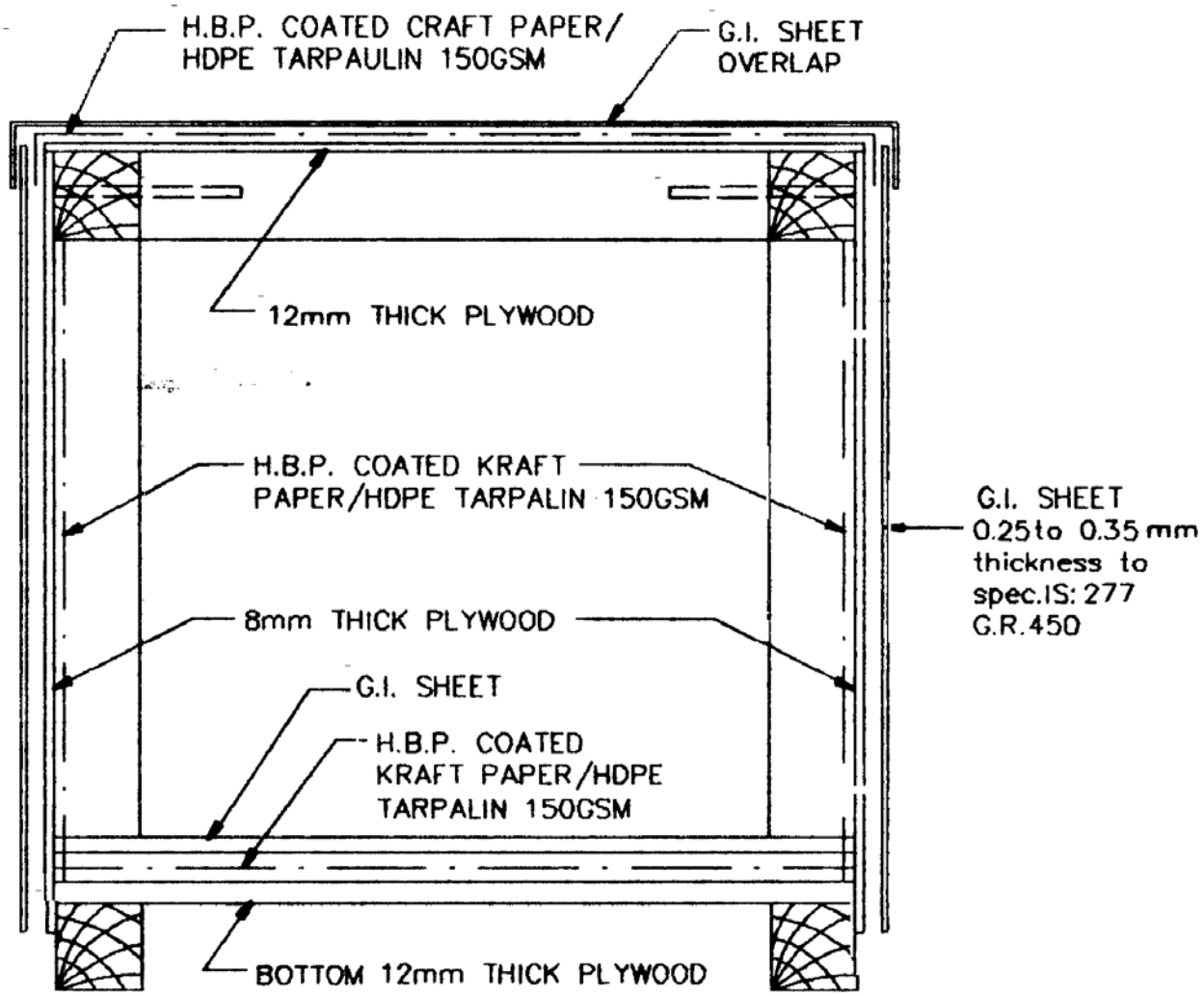
17.4 Marking

The specified marks applied to wood packaging material treated in accordance with ISPM 15 must conform to the requirements described in ISPM 15.

18 PROVISION FOR INSPECTION

This clause is applicable only where contractual requirement of customer is there. For other packings this is not applicable.

Each transportable packing's shall have provision for inspection by customer authority etc. during transport from origin of dispatched till destination. This inspection may require opening of the package and subsequently closing it again. For this purpose suitable designed opening with bolted cover shall be provided. Such an opening shall be clearly marked as "OPENING" with clear instruction for opening & closing written on this cover. For large consignment the size of the opening shall be suitable to facilitate entry of personnel.



CLOSED PACKING CASE WITH
G.I.SHEET SHOWING LAYERS
OF PACKING MATERIALS

Figure 3

EXPORT PACKING

(PACKING INSTRUCTIONS FOR GENERAL COMPONENTS / ASSEMBLIES / EQUIPMENT)

1 GENERAL

This standard lays down packing instructions for export packing of components/assemblies/equipment to be dispatched against Customer's contracts, for which there are no special instructions issued by the Engineering Departments. For Seaworthy Packing refer standard AA0490004 wherever applicable.

The components/assemblies need to be packed suitably to avoid physical damage & corrosion during transit for storage. For specific applications, the concerned engineering department shall issue a product standard. Reference of this standard, must appear in the Shipping list/Packing List.

2 SCOPE

This procedure gives minimum guidelines for export packing to be complied with for packing of components/assemblies/equipment. This packing shall be suitable for different handling operations and for the adverse conditions during transportation and during indoor / outdoor storage for periods more than one year.

3 WOOD SPECIFICATION FOR PACKING:

a) The wood shall conform to specification AA51401.

In addition to the above the following has to be met:

The standard requires the use of debarked wood in the construction of compliant wood packaging material. Debarked wood is defined in the ISPM 15

b) Ply Wood planks as per specification IS:303 Gr. “MR” Type A,B are used for the sides, top & bottom of the packing cases.

c) Ply Wood of marine grade as per IS:710 for packing of control equipment and for support batten pinewood to be used as per specification AA51401.

4 TYPE OF PACKING:

The following types of packing have been standardized for packing of general components/assemblies.

- **‘OP’** - Open Type
- **‘PP’** - Partially Packed
- **‘CP’** - Crate Packing - Components/Equipment requiring physical protection
- **‘CQ’** - Case Packing - Small medium Components/ Assemblies/ Equipment which require corrosion & physical protection
- **‘CR’** - Case Packing - Electrical Components/Assemblies which require special packing viz. Water Proof, Shock Proof, etc.

DESCRIPTION OF TYPES OF PACKING

The various types of packing, as standardized above, are described below.

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4.1 'OP' - Open Type

In case, of components which are not affected by water & dust & do not require special protection &, are generally not machined, shall be sent as open packages. However these components may be sent in crates, wherever necessary.

4.2 PP' - Partially Packed

Components which need special protection, at selected portions only, shall be dispatched partially packed. Machined surfaces should not be allowed to come directly in contact with the wood. Such surfaces after application of TRP should be protected with Multi-layered cross laminated plastic film to AA51420.

4.3 'CP' - Crate Packing – General

Assemblies/Components which need only physical protection from the point of view of handling shall be dispatched duly packed in crates.

4.4 'CQ' - Case Packing - Machined Components/Assemblies/Equipment

a) Small & Medium sized components/assemblies/equipment due to size/weight & to avoid handling, and pilferage, problems shall be packed in Case/Containers.

b) Wherever required adequate quantity of silica gel to AA55619 or VCI Powder/ Tablets, packed in thin muslin cloth cotton bags shall be suitably placed.

c) Small machines/components of less weight shall be provided with suitable cushioning. Wood Wool/Expanded Polyethylene Foam Sheet, if used, shall be sandwiched between polyethylene sheets and sealed.

d) The components inside the case shall be entirely covered with Multi-layered cross laminated plastic film to AA51420, where-ever required.

4.5 'CR' - Case Packing - Electrical & Electronic Components/Assemblies

Delicate components likely to be damaged e.g. Gauges, Instruments etc. are to be wrapped in waxed paper or polyethylene air bubble film and packed in cartons.

a) Adequate quantity of Silica gel to AA55619 packed in cotton bags, of 100 grams each are to be suitably placed in the cartons. The cartons shall be entirely covered with Multi-layered cross laminated plastic film to AA51420, before being packed in the cases.

b) VCI Powder/Tablets can be used as an alternative to Silica Gel to AA55619.

c) Empty space in the cartons shall be filled with small chips of Expanded Polystyrene (Thermocole), Wood Wool etc. Polyethylene air bubble film shall conform to IS 12787/AA51420 Expanded polystyrene (Thermocole) shall conform to AA51416.

d) The cartons shall be manufactured from corrugated Fibre Board, meeting requirements of AA51414.

4.6 Special Packing

Components requiring special packing (as per customer/contractual/ engineering requirements) not included in this specification shall be covered by product standards.

5 PREPARATION OF PACKING CASE:

1) Export items are to be packed in sea-worthy wooden/Ply board cases.

2) The base of the case shall be made of wooden battens for planks giving necessary reinforcement, such that the bottom of the equipment is at a height of 100 to 200mm from the ground level depending upon size & weight of equipment. However for packing cases of smaller size equipment can be at a height of 40mm from the ground level.

3) The four sides & top cover shall be lined, from inside with multi-layered cross-laminated polyethylene sheet of 90GSM as per AA51420 and tacked at suitable places.

   Whenever specified the top cover will have a layer of multi-layered cross laminated polyethylene sheet of 90 GSM over the cover. This should project about 100 - 250mm on all sides.

It is preferable to have a single piece of the above Multi-layered cross laminated polyethylene sheet fixed on the four sides. In case jointing is unavoidable, it should be done by overlapping of approximately 100mm.

4) Put the job on the base and wherever necessary may be screwed / fastened.

5) In case of delicate component Packing Viz. Electrical & Electronic components for instruments/ assemblies, a rubber sheet, Self-expanded polyethene foam sheet as per AA51423, preferably 10mm thick, shall be fixed on to the base to act as cushioning to the equipment.

6) Place the Components/cartons with corrosion inhibitors duly applied wherever necessary for place suitably, thin muslin cloths bags containing 100grams (approx.) of activated Blue Silica Gel to AA55619, wherever necessary. Alternatively VCI Powder or Tablet may be used.

7) In case, depression is formed, at the top, after the equipment is lowered, provide ply board/wooden batons.

8) Whole Equipment shall be covered and sealed with Multi-layered cross-laminated Polyethylene sheet to AA51420.

9) For indoor panels/equipment, provide suitable packing batons with covering of Thermocole/ expanded soft polyethylene foam/polyethylene air bubble film wrapped with suitable cords, to avoid cutting of the polyethylene sheet so that finished surface is not damaged.

10) Empty space in the box shall be filled with adequate cushioning material e.g. Thermocole Chips, Wood Wool etc. to avoid movement for shocks. Alternatively put wooden blocks/batons wherever necessary.

11) The inner side of the top cover shall be lined with M.L.C. laminated polyethylene sheet of at least 90GSM, which shall project approximately 25 to 150mm depending upon the size of the case on all sides of the top cover shall be provided below the top cover. This projection, after nailing the top cover, shall be folded over, on the sides of the crates & tacked, to, prevent ingress of water from the top.

12) For specific applications requiring additional protection the packing cases are covered with GI sheet on outside for sides and top; inside for bottom as per specification AA10166, thickness of G.I. sheet shall be 0.25mm.

13) For specific applications requiring inspection, additional inspection window has to be provided for custom clearance for export jobs.

6 SEALED PACKING:

Components sub-assemblies and assemblies sensitive to climatic conditions shall be packed seal tight. All the openings of the sensitive components, sub-assemblies and assemblies shall be blanketed to prevent the ingress of dust and moisture.

The components sub-assemblies and assemblies are completely covered with 2 layers of M.L.C. laminated poly film. All sharp corners and edges are to be protected by rubber mats to prevent the polyethylene sheet from damage. Top surface of the case shall be free from dents to prevent rain water pockets.

Certain special precautions are required for seal tight packing of specific item have to be covered by product standard.

7 OTHER PACKING MATERIAL

7.1 Volatile Corrosion Inhibitor (VCI) Paper as per AA51406:

a) Un-protected surfaces of steel and cast iron components, tools bearing, shaft seals etc. are covered with VCI paper. VCI paper has been impregnated with corrosion inhibitors which by evaporation and chemical conversion protect metals in an enclosed area against corrosion.

b) 7m3 VCI paper is necessary for 1 m3 of packed item approximately as per AA51406.

Application Limitation:

VCI paper shall not be used for components made of aluminium, aluminium alloys as well as Zinc, copper, brass, cadmium and silver.VCI powder is sprinkled inside the piping components ends shall be protected with end cover as specified in plant standards, drawings.

7.2 Moisture Absorber:

Silica gel is used for this purpose to protect the contents over sufficiently long time from corrosion. At the time of use, silica gel should be so dried that its colour becomes dark blue. These shall be filled in small cotton bags. Before sealing the equipment, the silica gel bags should be kept inside the polyethylene film cover at different locations. The quantity of silica gel depends on the dimension of the polyethylene sheet as well as transit and storage time.

7.3 Sling Plate:

Sling plate shall be provided to prevent damage to the packing box during lifting. Size of the sling plate shall be selected depending upon the net weight of the consignment.

7.4 Packing Slip Holders:

Two nos. of packing list with suitable protecting cover shall be fixed one inside and the other outside of the packing box as per specification AA7240901.

7.5 Nails

The length and diameter of the nails depends upon the size of planks

7.6 Strapping Strips:

These are used for strapping the boxes. Suitable size of box strapping strip can be used as per size and weight of consignment. The material shall be free from rust.

7.7 Brackets:

These brackets are used for nailing to the corners of cubicle boxes.The brackets shall be of “L" shape, suitable holes shall be provided towards the end of each side for screwing /nailing.

7.8 Fasteners:

Bolts, double nuts, spring washers of suitable size will have to be used for packing of some special items like transformers, reactors, breakers, etc., to hold the job to the bottom plank of the box.

7.9 Polyethylene Sheet:

The polyethylene sheets are used to make covers to the jobs individually.multi-layered cross laminated polyethylene sheet as per AA 51420 can be used for packing of jobs.

7.10 Expanded Poly Foam Sheet and Air Bubble Film:

This item is used for covering the delicate items, Expanded Polyethylene Foam Sheet as per specification AA51423 and air bubble film as per specification AA51426

7.11 Thermocol (Expanded Polystyerene) Sheets:

This is used for covering delicate items. This material shall be as per spec. no AA51416

7.12 Cotton Bags:

These are used for holding silica gel.

7.13 Marking Ink:

The ink used normally is black in color. In some special cases other color also will have to be used. The ink shall be non-fading/indelible and non-washable by water

7.14 Polyethylene Bags:

These are to be used for keeping the, Packing slips. The bag shall be of size 70 mm X 100 mm (minimum).

7.15 Mechanical Latching Clamps:

For specific items self locking clamps can also be used on need basis in conjunction with or apart from regular bolt and nut fixing arrangement, if needed.

8 DESIGN OF PACKING BOXES

Design/drawing of packing boxes shall be prepared based on actual weight and size of the equipment and shall be covered by concern product standards.

9 GENERAL PRECAUTIONS:

1) While fixing nails during packing, necessary care shall be taken to ensure that materials used for protection inside the case e.g. paper, polyethylene sheet, coir etc. do not get damaged.
2) Sling protection brackets to be provided on cases wherever required.
3) It shall be ensured that all stencil marks external, front & rear sides of the casing shall be of water proof Material to prevent obliteration in transit.
4) For packing of small/delicate items - Item may be wrapped properly with M.L.C. laminated polyethylene and wrapped item may be further wrapped with air bubble film as per spec. AA51426, these curtains will be subsequently packed in wooden/ply boxes as at clause 7.
5) The various caution signs shall be marked with stencil on both sides of the packing box.
6) Instructions on handling,storage, preservation, represervation and transport of export order components at works and site shall be covered by product standards.

10 MARKING

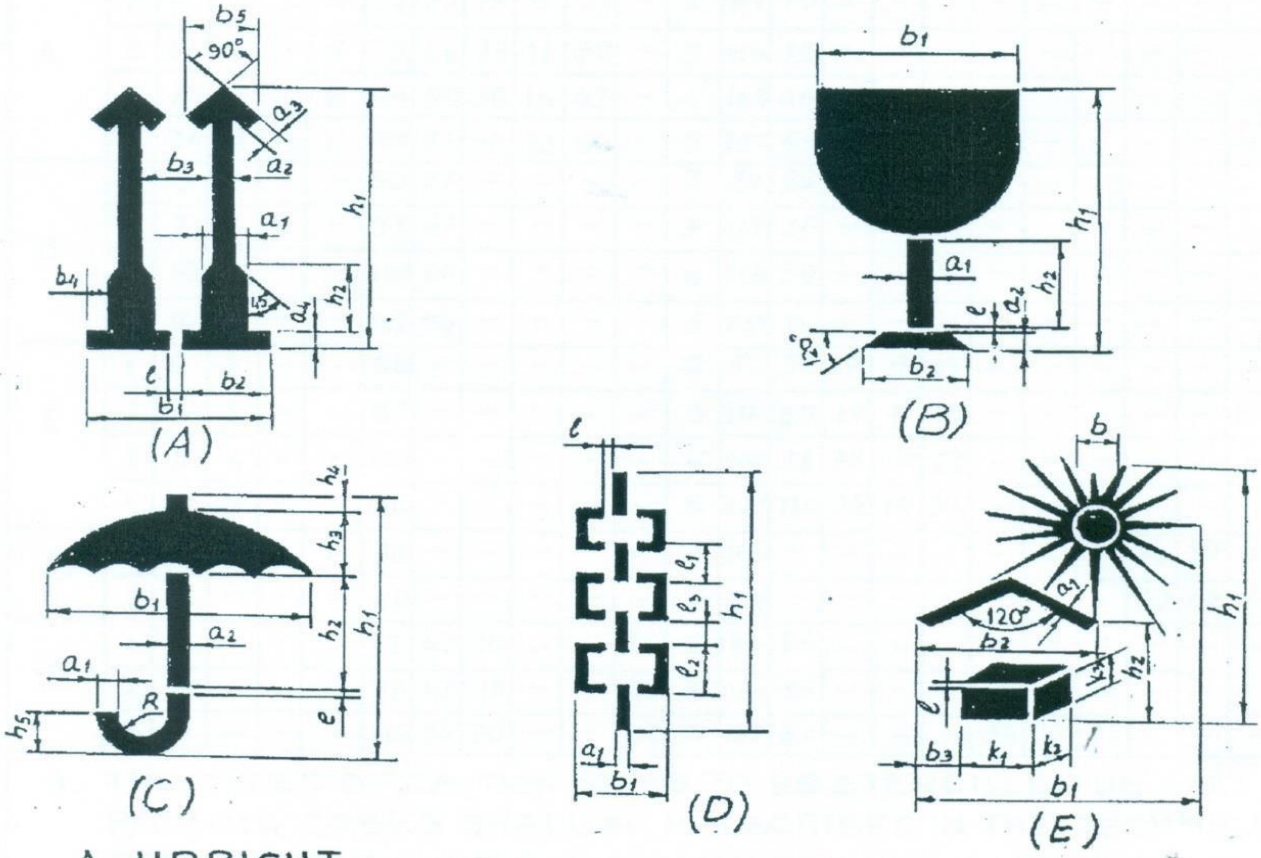
The following details are to be marked on the packing cases.

a) Address of consignee.
b) Purchase Order No.
c) Description of item or title of packing list.
d) Case identification Number.
e) Net Weight.
f) Gross Weight.
g) Dimensions of box
h) Marking showing upright position.
i) Marking showing sling position.
j) Marking showing umbrella (i.e. for machines/components to be stored under covered storage.

CORPORATE STANDARD

MARKINGS ON PACKING CASES

1. THIS PLANT STANDARD PRESCRIBES THE VARIOUS CAUTION SIGNS AND OTHER MARKINGS ON PACKING CASES.
2. DIMENSIONS IN THE TABLE 1 SHALL BE USED FOR MAKING STENCILS ONLY.



A. UPRIGHT
B. FRAGILE
C. PROTECTION FROM FALLING OR CONDENSING MOISTURE.
D. SLINGING POSITION
E. PROTECTION FROM DIRECT RADIATIONS.

CENTER OF GRAVITY

Figure 1 – Markings

DESIGN-ATION		DIMENSIONS IN mm.																						
		a_1	a_2	a_3	a_4	b_1	b_2	b_3	b_4	b_5	b	l	h_1	h_2	h_3	h_4	h_5	K_1	K_2	K_3	l_1	l_2	l_3	R
A	1	12	5	5	4	52	25	19	8	21	–	2	84	23	–	–	–	–	–	–	–	–	–	–
	2	17	7	7	6	75	36	29	11	30	–	3	119	33	–	–	–	–	–	–	–	–	–	–
	3	24	10	10	8	104	50	38	16	42	–	4	168	46	–	–	–	–	–	–	–	–	–	–
	4	34	14	14	11	147	71	59	23	60	–	5	239	65	–	–	–	–	–	–	–	–	–	–
B	1	5	5	–	–	50	33	–	–	–	–	2	84	25	–	–	–	–	–	–	–	–	–	–
	2	7	7	–	–	71	47	–	–	–	–	3	119	36	–	–	–	–	–	–	–	–	–	–
	3	10	10	–	–	100	66	–	–	–	–	4	168	50	–	–	–	–	–	–	–	–	–	–
	4	14	14	–	–	142	94	–	–	–	–	5	239	71	–	–	–	–	–	–	–	–	–	–
C	1	4	3	–	–	66	–	–	–	–	–	2	80	39	19	5	11	–	–	–	–	–	–	6
	2	6	4	–	–	85	–	–	–	–	–	3	114	55	27	7	16	–	–	–	–	–	–	9
	3	8	6	–	–	120	–	–	–	–	–	4	160	78	38	10	22	–	–	–	–	–	–	12
	4	11	9	–	–	170	–	–	–	–	–	5	227	110	54	14	31	–	–	–	–	–	–	17
D	1	6	–	–	–	30	–	–	–	–	–	4	148	–	–	–	–	–	–	–	30	30	10	–
	2	9	–	–	–	42	–	–	–	–	–	5	209	–	–	–	–	–	–	–	42	42	14	–
E	1	3	–	–	–	69	47	10	–	–	16	2	91	26	–	–	–	17	8	11	–	–	–	–
	2	4	–	–	–	98	67	15	–	–	23	3	128	33	–	–	–	24	11	16	–	–	–	–
	3	6	–	–	–	138	94	20	–	–	32	4	182	62	–	–	–	34	16	22	–	–	–	–

Black and Red Marking Ink to IS:1234 "Ink, Stencil, Oil Base, For Marking Porous Surfaces" or duplicating ink stencilling, oil base for marking porous surfaces.

All cases containing fragile items are to be stencilled with red marking and stencilling paint/ink

"HANDLE WITH CARE", "FRAGILE DO NOT TURN OVER".

Besides the caution signs the product information's shall be stencilled of letters with 13mm to 50mm height.

Incase of consignment consists of more than one package; each package shall carry its package no as given in shipping list. All caution signs shall be stencilled in higher quality full glossy out door finishing paint red in colour (AA56126). All other markings shall be carried out in black enamel (AA56126).

Caution signs & other markings shall be stencilled on both the end shooks & the side shooks. Caution sign (for slinging) shall be stencilled only on side shooks at the appropriate place.

Note: Incase the size of package is small for using the stencils, and then hand written letters/figures shall be allowed.

11 PROCEDURE FOR HANDLING OF COMPONENTS

The purpose of this procedure is to protect the quality of the components/equipment while handling in various stages of manufacturing packing & despatching.

1) Adequate care shall be taken in handling the material, and components to avoid damage during receipts, storage issue manufacture & despatch operations.
2) Appropriate material handling equipment like fork lifters, cranes etc. Shall be used where needed.
3) Lifting by crane and transportation by trolley of critical items and large components like rotors castings etc. Shall be done carefully.

4) For critical items, where specified, special handling fixtures shall be used for lifting.
5) Slings and shackles used for lifting the components/equipment shall be checked for fitness and suitability before use.
6) Slings used on machined surfaces shall be suitably padded. No slings shall be used on journal surfaces.
7) Precision machined components like blades, catches, rollers etc. Shall be lifted using suitable wooden pallets.
8) **HANDLING OF COMPONENTS ON RECEIPT/DESPATCH**:

Before loading/unloading a packing case from the carrier look for the following shipping instructions painted on the packing case.

- The markings showing the upright position.
- The markings showing the sling position
- Markings showing the fragile contents.
- Other required markings as per Cl.No:10

a) Appropriate cranes and slings should be used for different components/ cases. Slings should normally make an angle as minimum as possible (width wise) but in no case more than 15º.
b) Handling and lifting should be done without jerks or impacts.
c) Immediately after receipt of the goods, the packing should be examined all-round for any sign of damage. If necessary, lift the cover or a number of boards of the case so as to make the contents visible. In the event of sealed packing being used the plastic sheeting should not be damaged. It is imperative that the packing material is restored in original condition after the inspection.
d) On receipt of the equipment it should be checked with the shipping list and missing or damage if any should be reported immediately. It is important to arrange for immediate examination to determine the extent of the damage, the cause of the damage and where applicable the person or persons responsible for the damage. According to general practice when transporting by railway or by road vehicle the carrier concerned should be immediately called upon (within specified periods) for jointly establishing a statement of the damage. This is essential as a basis for a subsequent claim and possible damage report to the insurance company.
e) Protective coating applied on machined surfaces should not be disturbed. The plastic covering should be put back carefully so that it prevents ingress of dust and moisture. Some packing may have vapour phase inhibitor (VPI) paper enclosed inside the packing cases. This should be restored to its original place as far as possible.
f) Silica gel and such other chemicals kept in the box as desiccants and indicators should also be left in the box itself.

12 Treatment of Wood & Application and use of the mark

For seaworthy export packing, treatment of wood has to be carried out as below subject to BHEL Engg & QC approval.

As per customer requirement for export packing, wood to be treated as applicable should be done as per International Standards for Phytosanitary Measures ISPM: 15 to control the growth stages viz. egg to adult of structural insects (beetles, borers, bugs, fleas, flies, lice, moths, roaches, termites) and other pests (mice, rats, spiders) etc. in stored products.

The specified marks applied to wood packaging material treated in accordance with ISPM 15 must conform to the requirements described in Annex 2 of ISPM 15.

12.1 Heat treatment using a conventional steam or dry kiln heat chamber (treatment code for the mark: HT)

When using conventional heat chamber technology, the fundamental requirement is to achieve a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood (including its core).

This temperature can be measured by inserting temperature sensors in the core of the wood. Alternatively, when using kiln-drying heat chambers or other heat treatment chambers, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations inside the heat chamber has been measured and correlated with chamber air temperature, taking into account the moisture content of the wood and other substantial parameters (such as species and thickness of the wood, air flow rate and humidity). The test series must demonstrate that a minimum temperature of 56 °C is maintained for a minimum duration of 30 continuous minutes throughout the entire profile of the wood.

Treatment schedules should be specified or approved by the National Plant Protection Organisation (NPPO). Treatment providers should be approved by the NPPO.

12.2 Heat treatment using dielectric heating (treatment code for the mark: DH)

Where dielectric heating is used (e.g. microwave), wood packaging material composed of wood not exceeding 20 cm when measured across the smallest dimension of the piece or the stack must be heated to achieve a minimum temperature of 60 °C for 1 continuous minute throughout the entire profile of the wood (including its surface). The prescribed temperature must be reached within 30 minutes from the start of the treatment.

Treatment schedules should be specified or approved by the NPPO.

12.3 Methyl bromide treatment (treatment code for the mark: MB)

Wood packaging material containing a piece of wood exceeding 20 cm in cross-section at its smallest dimension must not be treated with methyl bromide.

The fumigation of wood packaging material with methyl bromide must be in accordance with a schedule specified or approved by the NPPO (National Plant Protection Organisation) that achieves the minimum concentration-time product (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. This CT must be achieved throughout the profile of the wood, including its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must not be less than 10 °C and the minimum exposure time must not be less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24 hours from the beginning of the treatment. In the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation.

If the CT is not achieved over 24 hours, corrective action needs to be taken to ensure the CT is reached; for example, the treatment is restarted or the treatment time extended for a maximum of 2 hours without adding more methyl bromide to achieve the required CT (see the footnote to Table 2).

Table 1 – Minimum CT over 24 hours for wood packaging material fumigated with methyl bromide

Temperature (°C)	CT (g·h/m^3) over 24 h	Minimum final concentration (g/m^3) after 24 h#
21.0 or above	650	24
16.0 – 20.9	800	28
10.0 – 15.9	900	32

In circumstances when the minimum final concentration is not achieved after 24 hours, a deviation in the concentration of ~5% is permitted provided additional treatment time is added to the end of the treatment to achieve the prescribed CT.

One example of a schedule that may be used for achieving the specified requirements is shown in Table 3.

Table 2 – Example of a treatment schedule that achieves the minimum required CT for wood packaging material treated with methyl bromide (initial doses may need to be higher in conditions of high sorption or leakage)

Temperature (°C)	Dosage (g/m^3)	Minimum concentration (g/m^3) at:		
		2 h	4 h	24 h
21.0 or above	48	36	31	24
16.0 – 20.9	56	42	36	28
10.0 – 15.9	64	48	42	32

Treatment providers should be approved by the NPPO.

12.4 Marking

The specified marks applied to wood packaging material treated in accordance with ISPM 15 must conform to the requirements described in ISPM 15.

13 PROVISION FOR INSPECTION:

This clause is applicable only where contractual requirement of customer is there. For other packings this is not applicable.

Each transportable packing's shall have provision for inspection by customer authority etc. during transport from origin of dispatched until destination. This inspection may require opening of the package and subsequently closing it again. For this purpose, suitable designed opening with bolted cover shall be provided. Such an opening shall be clearly marked as "OPENING" with clear instruction for opening & closing written on this cover. For large consignment, the size of the opening shall be suitable to facilitate entry of personnel.

14 REFERRED STANDARDS (Latest publications including amendments):

1) AA51401	2) IS:303	3)IS:710	4)AA10166
5)ISPM:15	6)AA51420	7)AA51423	8)55619
9)AA51406	10)AA51416	11)AA51426	12)AA56126