

BHARAT HEAVY ELECTRICALS LIMITED

TIRUCHIRAPALLI-620 014

Ref: BHEL/NGA/DCFC/ 002



**Document for procurement of two numbers of 50 - 60 kW DC Fast charger for
charging the Li-Ion Battery of Electric Bus**

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Contents

1.0 Brief scope of the work	3
2.0 Pre-Qualification Requirements	3
3.0 Quality Control and Inspection	5
4.0 Packing procedure	6
5.0 Documents required from vendor along with offer	6
6.0 Documents to be submitted for approval after ordering	6
7.0 Documentation along with supply of charging equipment	7
8.0 Installation and Commissioning	7
9.0 Delivery Schedule	7
10.0 AMC terms	7
Annexure 1:	
Table 1 Technical Specification for EV Charging station to charge the battery of Electric Bus	9
Abbreviations	
Table 2 Technical Specification of Distribution Box	11
Abbreviations	11

1.0 **Brief scope of the Work**

Supply of **two numbers of 50 - 60 kW** of GB/T, floor mounted Off-Board DC Fast chargers for Electric buses, including packing and forwarding, transportation, installation and commissioning. The chargers shall also be demonstrated for normal operation usage and successful testing. Further, training and for trouble shoot procedure should be imparted to end user by supplier engineer as per BHEL's specification (**Refer annexure 1**). The charger must meet all safety requirements as per the applicable National/International standards.

The scope of the work includes:

1. Supply of two numbers of 50-60 kW DC fast charger of GB/T along with distribution box for each charger
2. Installation and commissioning of two chargers

The charging infrastructure must comply with industry standard/statutory norms, standards and regulations and supplier must describe in detail

2.0 **Pre-Qualification Requirements**

Sl.No	Pre-Qualification Requirements	Bidder Confirmation to the points above	Documents to be attached	Bidder Remarks
1. (A)	<u>Indian OEM</u> The bidder shall be India based Original Equipment Manufacturer (OEM) of DC Charger Equipment.	Yes/No	Certificate of incorporation along with Article of association and memorandum of association.	

B)	<u>Non-Indian OEM</u> OEMs based outside India, who are making offer for this tender shall have authorized representatives in India for extending needed support related to product documentation, erection, commissioning, after sales service, spares & any other co-ordination work. Such OEM's shall indicate and furnish proof for the type, duration & validity of the agreement. The Indian representatives should have the team of experienced service engineers on payroll located at various parts of India. OEM shall furnish an undertaking that in case of change in Indian representatives/agent, OEM shall continue to support supplies w.r.t to field service and supply of spare parts.	Yes/No	Furnish proof for all the substantiating Documents.	
2.	The bidder should have designed, engineered, manufactured, type tested, supplied and commissioned DC Charger system for Electric vehicle application of capacity not less than 50 kW. The Reference List of DC Charger supplies made so far giving the ratings, year of supply, application, details of the customers, PO references, etc. to be provided along with the offer.	Yes/No	Reference list of all supplies made till date	
3.	The bidder shall undertake to extend AMC or provide service support for the equipment supplied, after the expiry of the warranty / guarantee period either directly or through a service representative. The DC Chargers supplied against this tender should carry an OEM warranty for a period of 2 years. Further, bidder should also undertake to offer AMC for a further period of 8 years and quote chargers thereof separately	Yes/No	Name and registered address of the Indian branch office or Indian representative for support of E&C and after sales service with	

	AMC cost will not be included for evaluation of main order.		organisation chart	
4.	Bidder should have ISO:9001 certificate or equivalent.	Yes/No	ISO 9001 certificate or higher	
5.	Bidder should have at least 2 years' experience in the business of manufacturing, sales and service of electrical/power electronics equipment including battery chargers, storage and AC to DC & DC to DC Converters.	Yes/No	Should furnish suitable supporting documents	
6.	The bidder should have obtained necessary certification for the Charger from ARAI or equivalent approving authority either in India or outside.	Yes/No	Certificate	

Note: a. The Pre-Qualification criteria are mandatory requirements and the technical bids will be evaluated only when the Pre-Qualification criteria are met.

b. Bidder must furnish all necessary supporting documents, as required, along with the bid to satisfy Pre-Qualification criteria as specified above.

3.0 Quality Control and Inspection

- a) The bidder shall be wholly responsible for the quality and performance of the supplied charging equipment as per the applicable standard/norms.
- b) BHEL reserves the right to visit the manufacturing site or the vendors supply chain partner's for quality inspection at any time. BHEL at its discretion may order the testing of random samples at an accredited Testing Laboratory.
- c) All tests shall be carried out as per AIS 138, and the bidder shall submit the relevant test reports.

d) After testing, if the charging equipment are found not matching the specifications at given test parameters, BHEL at its discretion may order for cancellation of complete order or cancellation of the particular lot. Any material/financial loss shall be to the account of the bidder in such cases.

Pre-Dispatch Inspection

The chargers ordered on the bidder shall be subjected to inspection, verification and/or test by the BHEL or its authorized representative at all stages and place, before, during and after the manufacture, prior to the dispatch.

The bidder shall maintain and provide statutory test certificates for each supplied charger, confirming compliance to the technical specifications and other tender requirements. The Test Certificate needs to be transmitted electronically to BHEL at least 48 hours in advance of pre-dispatch inspection date. Only those chargers meeting compliance certified by BHEL shall be dispatched by the bidder.

Upon delivery at the end user side, if the material/equipment does not meet the specifications, say, due to shipping damage, product mix-up, the material/equipment shall be liable for rejection and returned to the bidder for repairs / modification, etc. or for replacement. In such cases, all expenses including the to-and-fro freight, repacking charges, any other costs, etc. shall be to the account of the bidder. The bidder shall arrange removal of the rejected items within 15 days from the date of notification. In the event the bidder fails to lift the material in 15 days, BHEL is at liberty to dispose the rejected items in any manner as it may deem fit.

Quality Plan

The bidder shall submit the Bidder Quality Plan (BQP). The submitted BQP will be approved by BHEL upon placement of purchase order only after which the bidder should proceed with the supply related activities.

4.0 Packing procedure

The items should be supplied in proper weather proof, transit worthy packing to avoid any damage during transit, storage and delivery. The bidder shall be responsible for the safe transport of the equipment till their delivery at Gorakhpur stores.

5.0 Documents required from vendor along with offer:

- a) GA (General arrangement) Drawing and foundation load details
- b) GA drawing of all electrical components in EV charger (clearly indicating civil foundation needs etc., if any)
- c) Installation Instructions
- d) Charger performance curve
- e) Electrical input arrangement of charging station
- f) Quantity of any consumable required like cooling water, compressed air etc. to be specified
- g) Technical data sheet for EV charger (as per spec format)
- h) Dimensions and weight of each Charger

6.0 Documents to be submitted for approval after ordering:

- a) EV charger circuit design
- b) Technical data sheet of all the power electronic switches and electric components used in charger circuit
- c) Quality plan
- d) Performance test report

7.0 Documentation along with supply of charging equipment

The bidder shall provide the following documents (both hard copy and soft copy) to BHEL for reference:

Manual / Guide: User Manuals, FAQ, OEM Functional Manuals and Installation Guides and Troubleshooting Guides.

Certificates: Equipment Warranty, Insurance, tests, certificates if any.

8.0 Installation and Commissioning

All electric equipment and components including the related supplies i.e., cables, glands, fasteners, (including but not limited to) etc. required for Installation and commissioning shall be under bidder's scope. **BHEL will provide the three phase main supply line up to location of Distribution box. Distribution box along with input cable of 15 m length from Distribution box to charger with necessary connectors is under bidder scope.** Commissioning of Charger System at Gorakhpur shall be under the scope of Bidder.

Final product acceptance shall be based on successful completion of erection and commissioning. Any replacement of failed/damaged items during commissioning shall be exclusively at Bidder's cost. Bidder is advised to stock necessary spares and ensure easy availability to facilitate trouble free commissioning. The Bidder is expected to work with project managers from communication/system integrator/ utilities for resolving the following risks (non-exhaustive indicative list): poor equipment performance, project scope creep, unavailability of internal and external sources, Rectification of equipment faults.

9.0 Delivery Schedule

Sl. No	Milestone	Duration
1.	Supply of two numbers of DC Fast charger of 50-60 kW along with distribution box at Gorakhpur, Uttar Pradesh	45 days from the date of PO
2.	Installation and Commissioning	20 days from the date of clearance by BHEL against milestone 1

10.0 AMC Terms:

- Two preventive maintenance per annum
- Break down calls as and when required

Price for AMC of 8 years shall quote separately

Sl.no	Description	Nos.
1	1 st year after expiry of warranty period	2
2	2 nd year after expiry of warranty period	2
3	3 rd year after expiry of warranty period	2
4	4 th year after expiry of warranty period	2
5	5 th year after expiry of warranty period	2
6	6 th year after expiry of warranty period	2
7	7 th year after expiry of warranty period	2
8	8 th year after expiry of warranty period	2

Note: Quote for AMC shall not be considered for bid evaluation.

Annexure 1

Table 1 Technical Specification for EV Charging station to charge the battery of Electric Bus

Sl.No	Parameter	Charger
1	Output Capacity	50 - 60 kW
2	Regulation Method	Regulated DC EV charging station with combination of CVC or CCC but not simultaneously
3	Input AC supply system	3 phase, 5 wire AC system(3ph+N+E)
4	Input Voltage	Nominal Input Voltage 415V (+6% and -10%) as per IS 12360
5	Input Frequency	50 Hz
6	Output DC Voltage	200-750 VDC
7	Output DC Current	80 - 90 Amps max.
8	Ingress Protection	Minimum IP55
9	Power Factor	> 0.96
10	THD	≤5%
11	Efficiency	>95% at nominal output power
12	Charging cable length	5m
13	Number of connectors/gun	1
14	Connector/socket type	GB/T As per standards
15	Insulation (input – output)	As per Standards
16	Operating temperature	0 °C to 55 °C
17	Working humidity	≤ 95% RH
18	Ventilation/Cooling system	Forced Air cooling
19	Display	Minimum 7 inch Touch screen or keypad (backlighted).
20	Display Messages	• Vehicle plugged in / Vehicle plugged out • Total time required for charging • Duration since start of charge, • kWh consumed. • User authorization status

		• Idle / Charging in progress: SOC • Fault conditions • Metering Information: Consumption Units
21	Support Language	English
22	User access authorization	RFID system or other equivalent or better system
23	Visual Indicators	Error indication, presence on Input supply indication, state of charge process indication
24	ON-OFF(start-stop) switches	Mandatory
25	Emergency Stop switch	Simple push button type in Red colour, visible and easily accessible
26	Communication between Charger and vehicle	BMS Communication /Compliance standard: GB/T
27	Communication interface between charger and central management system(CMS)	Ethernet, 3G/4G and Wi-Fi Communication protocol: OCPP 1.6 or higher
28	Protection	Over current circuit breaker, Under voltage, Over voltage, Surge protection, Short circuit, Faulty Insulation, Isolation, Ground monitoring, communication failure
29	Body	ABS/Metal
30	Billing and payment requirement	a) Billing: Based on grid responsive metering b) Payment: BHIM / Bharat QR or UPI compliant mobile payment c) Metering: As per Indian metering standard
31	Warranty	2 year

32	Length of Power cable from Distribution box to DC charger	15m (35sqmm x 4 Core Copper Armoured Cable, XLPE insulation Material)
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Table 2 Technical Specification of Distribution Box

Sl.No	Items	Remarks
1	MCCB -3/Pole or 4/Pole, 100 Amps/430 V	1 Number. This should have proper enclosure.
2	CT 100/5 Amps for each phase	3 Number
3	Schneider Make EM6400 Series Multi-function meter	1 Number
4	R.Y.B Indication Lamps	Each 1 No.
5	Provision for cable entry holes for Input and output	
6	Provision for input and output connecting terminal	
7	Control wirings with MCB	
8	Power supply indication clusters for ON/OFF/TRIP	1 No.

Note: Distribution box must offer with enclosure metal with door for opening and closing

Abbreviations

ABS	Acrylonitrile Butadiene Styrene
AC	Alternating Current
AIS	Automotive Industry Standards
ARAI	Automotive Research Association of India
AMC	Annual Maintenance Contract
BHEL	Bharat Heavy Electricals Limited
BMS	Battery Management System
CCC	Constant Current Charging
CVC	Constant Voltage Charging
CIRT	Central Institute of Road Transport
CMVR	Central Motor Vehicle Rules
CT	Current Transformer
DC	Direct Current
EMC	Electro Magnetic Compatibility
EV	Electric Vehicle
FAQ	Frequently Asked Questions

IEC	International Electrotechnical Commission
IP	Ingress Protection
ISO	International Organization for Standardization
MCB	Miniature Circuit Breaker
MCCB	Molded Case Circuit Breaker
OCPP	Open Charge Point Protocol
OEM	Original Equipment Manufacturer
RFID	Radio-Frequency Identification
RH	Relative Humidity
THD	Total Harmonic Distortion