



An ISO 9001  
Company

## Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

MATERIALS MANAGEMENT / CAPITAL EQUIPMENT

### ENQUIRY

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	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
	2620800143	13.12.2008	16.01.2009

You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order

Item	Description	Quantity	Delivery (Item required at BHEL on)
10	Supply, Erection, Commissioning and Revamping of 50 MT LPG Bullet as per the technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )	2 Nos.	25.03.2009

**BHEL commercial terms & conditions with Price Bid and Bank Guarantee formats can be downloaded from BHEL web site <http://www.bhel.com> or from the Government tender website <http://tenders.gov.in> (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference “2620800143”.**

Tenders should reach us before 14:00 hours on the due date  
Tenders will be opened at 14:30 hours on the due date  
Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present

Yours faithfully,  
For BHARAT HEAVY ELECTRICALS LIMITED

Manager / MM / Capital Equipment

**Servicing and Reconditioning of 2x50MT LPG bullet, supply, erection, testing and commissioning of LPG accessories and distribution system.**

<b>Sl.No.</b>	<b>Description of Item</b>	<b>Specified/ To be confirmed</b>	<b>Offered</b>
<b>1.0</b>	<b>Application:</b>		
1.1	The existing LPG storage yard in MHD premises has 2x50MT LPG overground storage facility with associated safety and distribution systems. This facility is not in operation for the last ten years. Now this facility needs to be revamped and brought into operation/ use by a) servicing the LPG storage tanks, piping and b) supply and installation of unloading system, vapourisers, safety fittings, valves, pressure regulating system, instrumenation, electrical system, fire safety system etc. as detailed below:		
	<b>Section A: Scope of Servicing existing systems:</b>		
<b>2.0</b>	<b>LPG storage tank:</b>		
<b>2.1</b>	<b>Details of existing system:</b>		
2.1.1	<b>Quantity</b>	<b>2 nos.</b>	
2.1.2	Tank capacity	50 MT	
2.1.3	Water capacity	110 Cu.m	
2.1.4	Design code	IS: 2825-1969, Class A	
2.1.5	Design Pressure	17.60 Kg/ sq.cm	
2.1.6	Design temperature	65 deg.C	
2.1.7	Working temperature	Ambient	
2.1.8	Hydro test pressure	22.8 Kg/ sq.cm	
2.1.9	Installation configuration	Above Ground	
<b>2.2</b>	<b>Details of Servicing to be carried out:</b>		
2.2.1	Removing the existing valves in total, measuring/ instrument system, platform materials.	Vendor to confirm	
2.2.2	Installation of new valves in total, measuring/ instrument system, platform materials. Supply of the above items covered under supply section-B separately	Vendor to confirm	
2.2.3	Cleaning the inside and outside of the tanks and painting. Paint supply included in section-B.	Details of cleaning to be specified.	

Sl.No.	Description of Item	Specified/ To be confirmed	Offered
2.2.4	Conducting Hydro test and Ultrasonic test on the storage tanks by CCOE approved inspection agency and obtaining test certificates for suitability.	Vendor to confirm	
2.2.5	Interconnecting the existing/ new piping with the tanks.	Vendor to confirm	
<b>3.0</b>	<b>Piping system inside yard for LPG liquid and LPG Vapour line :</b>		
3.1	Details of existing piping and its suitability	Vendor to study at site	
3.2	Cleaning the inside with chemical and outside of the piping and painting. Paint supply included in section-B.	Vendor to confirm	
3.3	Interconnecting the existing and new piping with the tanks/ valves etc.	Vendor to confirm	
	<b>Section B: Scope of Supply and installation:</b>		
<b>4.0</b>	<b>Unloading Pump:</b>		
4.1	Quantity	2 nos.	
4.2	Function	Liquid transfer from mobile tanker to storage tank	
4.3	Type	Positive displacement pump	
4.4	Capacity	400 LPM	
4.5	Make and model (Reputed make acceptable to BHEL)	Vendor to specify	
4.6	Inlet and outlet connection/ size	To suit the pipe connections as per design	
4.7	Motor duly coupled: Power rating	Vendor to specify	
4.8	Construction	Flame proof	
4.9	Make and model (Reputed make acceptable to BHEL)	Vendor to specify	
4.10	Unloading stations	1 nos.	
<b>5.0</b>	<b>Unloading Vapour recovery compressor:</b>		
5.1	Quantity	2 nos.	
5.2	Make and model (Corken, USA make or reputed make acceptable to BHEL)	Vendor to specify	
5.3	No.of stages and cylinders	Vendor to specify	
5.4	Motor duly coupled: Power rating	Vendor to specify	
5.5	Construction	Flame proof	

Sl.No.	Description of Item	Specified/ To be confirmed	Offered
5.6	Make and model (Reputed make acceptable to BHEL)	Vendor to specify	
5.7	Unloading stations	1 nos.	
5.8	Protection against dry run	Vendor to confirm	
5.9	Provision of liquid sensor at inlet	Vendor to confirm	
<b>6.0</b>	<b>LPG Vapouriser:</b>		
6.1	Quantity	4 nos.	
6.2	Capacity	500 kg/hr.	
6.3	Make and model (Reputed make approved by CCOE)	Vendor to specify	
6.4	Type	Electrically heated, hot water bath type, to deliver dry saturated LPG vapour.	
6.5	Inlet and outlet connection/ size	To suit the pipe connections as per design	
6.6	Design Pressure	Vendor to specify	
6.7	Test Pressure	Vendor to specify	
6.8	Solenoid valve at liquid inlet	Vendor to confirm	
6.9	Pressure switches	One safety pressure switch each on the vapouriser before the regulator and one pr. switch on the outlet after the regulator to control the solenoid valve.	
6.10	Pressure relief valve	Vendor to confirm	
6.11	Mounting arrangement	Vendor to specify	
6.12	Dimension details	Vendor to specify	
<b>7.0</b>	<b>Safety fittings for LPG bullets and for the pipeline:</b>		
7.1	Safety relief valve (Required quantity and size as per design)	Vendor to specify	
7.2	Excess flow check valve (Required quantity and size as per design)	Vendor to specify	
7.3	Pressure gauges, Temperature gauges, level gauges, roto gauge(Required quantity and size as per design)	Vendor to specify	
7.4	Pop action valve with isolation valve (Required quantity and size as per design)	Vendor to specify	

Sl.No.	Description of Item	Specified/ To be confirmed	Offered
7.5	Pipe fittings for the valves/ pipelines (Required quantity and size as per design)	Vendor to specify	
7.6	Make and material of the valves, gauges, fittings	Vendor to specify	
<b>8.0</b>	<b>Piping system inside yard for LPG liquid and LPG Vapour line :</b>		
8.1	Seamless sch.80 heavy duty pipelines- Liquid inlet/ outlet, vapour balance/ outlet, drain line. (Required size and quantity over and above the existing piping as per design)	Vendor to specify	
<b>9.0</b>	<b>Structural steel:</b>		
9.1	Steel required for approach platforms (Chequered plates/ floor grills) on the tank , piping supports and other requirements as per design	Vendor to confirm	
<b>10.0</b>	<b>Valves on Tank and pipelines:</b>		
10.1	Ball Valves with end connections flanged (Required quantity and size as per design)	Vendor to specify	
10.2	Strainer (Required quantity and size as per design)	Vendor to specify	
10.3	Non-return valve (Required quantity and size as per design)	Vendor to specify	
10.4	Make, material, test pressure of the above valves	Vendor to specify	
<b>11.0</b>	<b>Pressure regulating station:</b>		
11.1	Pressure regulators(Required quantity and size as per design)	Vendor to specify	
11.2	Make, inlet/ outlet pressure, flow rate of the regulator	Vendor to specify	
11.3	Filters for pressure regulator(Required quantity and size as per design)	Vendor to specify	
11.4	Slam shut-off for pressure regulator (Required quantity and size as per design)	Vendor to specify	
11.5	Make and end connections	Vendor to specify	
<b>12.0</b>	<b>Decanting Hoses:</b>		
12.1	Double ply wire braided neoprene hose for liquid and vapour (Required quantity and size as per design)	Vendor to specify	
12.2	Make and pressure rating of the hoses	Vendor to specify	
<b>13.0</b>	<b>Fire Fighting facility:</b>		

Sl.No.	Description of Item	Specified/ To be confirmed	Offered
13.1	Fire Extinguishers of DCP type.(Required quantity and capacity as per design)	Vendor to specify	
13.2	Sand buckets with top cover (Required quantity)	Vendor to specify	
13.3	Fire hydrant system as per CCOE norms comprising of Fire monitors, fire hydrants, fire hoses, fire hose boxes of required specifiacion and quantity	Vendor to specify	
13.4	Ring main pipe for fire hydrant and sprinkler system, nozzles for tank, unloading area, pump, compressor shed.	Vendor to specify	
13.5	Storage capacity of water requirement for fire safety	Vendor to specify	
13.6	Make of the fire fighting system components	Vendor to specify	
<b>14.0</b>	<b>Instrumentation:</b>		
14.1	Remote opearted valves (Required quantity and size as per design)	Vendor to specify	
14.1.1	Mode of operation of Remote Operated Valve(ROV)	Vendor to specify	
14.1.2	Make, model, material of the valves	Vendor to specify	
14.1.3	Air pressure required for operation	Vendor to specify	
14.2	Pressure gauges (Required quantity and size as per design)	Vendor to specify	
14.2.1	Make, dial size, pr. range of the gauges	Vendor to specify	
14.3	Level switches (flame proof) for level alarm	Vendor to specify	
14.3.1	Make, model, connections	Vendor to specify	
14.4	Level gauges	Vendor to specify	
14.4.1	Make, model, accuracy	Vendor to specify	
14.5	Emergency shut-down switches	Vendor to specify	
14.6	Gas mass flow meter	Vendor to specify	
<b>15.0</b>	<b>MCC/ Instrumentation control panel:</b>		
15.1	Type	Non-flame proof, free standing, dust and vermin proof, compartmentalized, made out of CRCA sheet steel.	
15.2	Panel to comprise of all switchgears, indicating lamps, instruments, push buttons, wiring, MCB, Terminal blocks, busbars, painting etc.	Vendor to confirm	
15.3	Electrical power and control cabling with cable trays, terminations as required	Vendor to confirm	

Sl.No.	Description of Item	Specified/ To be confirmed	Offered
<b>16.0</b>	<b>Earthing:</b>		
16.1	Cathodic protection for mounded tanks	Vendor to confirm	
16.2	Earth strips of required size for tank, unloading pump, compressors, vapourisers	Vendor to confirm	
16.3	Copper jumpers for all flanges	Vendor to confirm	
<b>17.0</b>	<b>Hardware items:</b>		
17.1	Required flanges, bends, tees, reducers, gaskets, nuts, bolts etc.	Vendor to confirm	
<b>18.0</b>	<b>Painting:</b>		
18.1	Coaltar anti corrosive painting of tank as per code, painting of pipelines, unloading pumps, compressors, regulation station valves in different colours as per safety norms.	Vendor to confirm	
	<b>Section C: Installation of LPG distribution pipeline:</b>		
<b>19.0</b>	<b>Pipeline:</b>		
19.1	Erection and painting of Pre-fabricated trestles that support the LPG pipelines. The trestles will be of 7.5m in height and fabricated out of M.S. pipes. The foundation for the trestle including the bolts and fabrication of trestle are in the scope of BHEL. The trestles to be painted with one coat of red oxide paint and two coats of synthetic enamel paint. Paint in the scope of vendor.	130 nos.	
19.2	Erection and painting of Pre-fabricated road crossing bridges that protect the LPG pipelines. The bridges will be of average 13m in length and fabricated out of M.S. materials. The bridges to be welded and supported on the vertical trestles. The bridges to be painted with one coat of red oxide paint and two coats of synthetic enamel paint. Paint in the scope of vendor. Fabricated bridge will be given by BHEL free of cost.	5 nos.	

Sl.No.	Description of Item	Specified/ To be confirmed	Offered
19.3	Installation of LPG distribution pipeline on the trestle of size 125mm NB with necessary clamps and welding and painting with one coat of red oxide paint and two coats of synthetic enamel paint. This line to be laid from LPG storage yard upto the Production building. Required pipes shall be supplied by BHEL free of cost in standard length. Paint in the scope of vendor.	1300 m	
19.4	Installation of LPG distribution pipeline on the steel structures of building of size 100mm NB with necessary supports and clamps and welding and painting with one coat of red oxide paint and two coats of synthetic enamel paint. This line to be laid as LPG header line within production building connecting various production bays. Required pipes shall be supplied by BHEL free of cost in standard length. Paint in the scope of vendor.	1000 m	
19.5	Installation of LPG distribution pipeline on the steel structures of building of size 50mm NB with necessary supports and clamps and welding and painting with one coat of red oxide paint and two coats of synthetic enamel paint. This line to be laid as distribution line in each production bay. Required pipes shall be supplied by BHEL free of cost in standard length. Paint in the scope of vendor.	4000 m	
19.6	Installation of LPG distribution pipeline on the steel columns of building of size 20mm NB with necessary supports and clamps and welding and painting with one coat of red oxide paint and two coats of synthetic enamel paint. This line to be laid as vertical drop line from distribution line to terminal user point. Required pipes shall be supplied by BHEL free of cost in standard length. Paint in the scope of vendor.	2000 m	
19.7	Supply and installation of required bends, elbows, flanges, metallic gaskets of various sizes as required for the installation of the above pipelines.	Qty. as required.	

Sl.No.	Description of Item	Specified/ To be confirmed	Offered
19.8	Unit rate to be quoted to be offered for the above installations itemwise in order to make payment on the actuals.	Vendor to note	
<b>20.0</b>	<b>Control elements and gauges:</b>		
20.1	Supply and installation of safety control/ isolation valves, flange type non return valves in the distribution header lines for safety and maintenance purpose as per safety norms. Details and quantity as per design to be furnished in the offer.	Qty. as required.	
20.2	Supply and installation of suitable LPG control valve with flash back arrestor and 3/4" to 3/8" reducer suitably connected. The above to be suitable and installed in the 20mm NB drop line for usage of LPG. The valve, flash back arrestor to be of reputed make and details of specification, make to be furnished by the vendor.	300 sets	
20.3	Supply and installation of Pressure gauges with isolation valves and end fittings at suitable locations in the pipeline. Specification and make to be furnished in the offer.	20 sets	
20.4	Unit rate to be quoted to be offered for the above installations itemwise in order to make payment on the actuals.		
<b>21.0</b>	<b>Design, Erection and commissioning:</b>		
21.1	Approval and licence from CCOE, Nagpur (Liason services)	Vendor to confirm	
21.2	Preparation of layout drawings for storage yard showing the location of various items/ P.I. diagram/ civil drawings	Vendor to confirm	
21.3	Preparation of calibration chart on the basis of tank capacity for liquid level measurement	Vendor to confirm	
21.4	Drawing for vapouriser shed and pump shed	Vendor to confirm	
21.5	Plan of surrounding facilities	Vendor to confirm	
21.6	Design calculation for other equipments	Vendor to confirm	
21.7	Design of safety/ control elements in the LPG distribution system meeting the safety norms.	Vendor to confirm	

Sl.No.	Description of Item	Specified/ To be confirmed	Offered
21.8	Third party inspection certificate for tank and system	Vendor to confirm	
21.9	Erection of complete system consisting of vaporisers, pumps, compressors, piping, valves, instrumentation/ electrical systems and all other equipments included in the supplies.	Vendor to confirm	
21.10	The vendor should arrange necessary equipments, tools to carry out the erection and commissioning. If necessary welding machine and cutogen torch to carry out welding and cutting operation.	Vendor to confirm	
21.11	Conducting leak test in the LPG distribution system pipelines in accordance with the provisions made in IS:6044 part II.	Vendor to confirm	
21.12	Inspection by competent person and issuance of safety certificate	Vendor to confirm	
21.13	Commissioning service and handing over	Vendor to confirm	
21.14	Training of personnel on operation and maintenance	Vendor to confirm	
<b>22.0</b>	<b>BHEL scope:</b>		
22.1	Complete civil jobs as per approved layout	Vendor to note	
22.2	The consumables required like Oxy-Acetylene gas, welding electrode, kerosene, grease and cotton waste only will be supplied free of cost.		
22.3	Sheds for vapourisers, pumps, compressors	Vendor to note	
22.4	Input power supply to power distribution board (non flameproof)	Vendor to note	
22.5	External flood lighting of the fenced area	Vendor to note	
22.6	Free electricity and water for erection purpose.	Vendor to note	
22.7	Water supply for fire fighting system	Vendor to note	
22.8	Required crane facility with lifting tackles free of cost	Vendor to note	
22.9	Statutory fees payable to Explosives authorities towards drawing approval, final licencing fees.	Vendor to note	
22.10	Obtaining NOC from the local Govt./ administration	Vendor to note	
22.11	Drawing showing the tentative layout of distribution piping in the factory premises shall be provided.	Vendor to note	
<b>23.0</b>	<b>Qualifying conditions:</b>		

<b>Sl.No.</b>	<b>Description of Item</b>	<b>Specified/ To be confirmed</b>	<b>Offered</b>
23.1	The Vendor should be approved by the Department of Explosives, Government of India for fabrication of Pressure vessels as well as undertaking complete LPG Bulk installations.	Vendor to confirm	
23.2	The vendor should have supplied and installed minimum 20MT capacity LPG tank.	Vendor to confirm	
23.3	The Vendor should have experience in the field of LPG installations for a minimum period of 5 years.	Vendor to confirm	
23.4	List of major LPG installations carried out should be furnished with the offer.	Vendor to furnish	

## **2x50MT LPG storage and distribution system**

### **Price break-up schedule:**

- |   |                      |
|---|----------------------|
| 1. Servicing the LPG storage tank and piping system inside the yard                                   | : 1 lot              |
| 2. Unloading pump   | : 2 nos.             |
| 3. Unloading vapour recovery system   | : 2 nos.             |
| 4. LPG Vapouriser   | : 4 nos.             |
| 5. Safety fittings for the LPG bullets and pipe line  | : 1 lot              |
| 6. Valves on the tank, pipelines, pressure regulating station,<br>associated piping, steel structures | : 1 lot              |
| 7. Fire fighting facility, earthing, painting   | : 1 lot              |
| 8. Instrumentation/ MCC equipments/ panels  | : 1 lot              |
| 9. Erection of pipelines of various sizes   | : qty as per enquiry |
| 10. Control elements and gauges   | : qty as per enquiry |
| 11. Design, erection and commissioning of vendor supplied items                                       | : 1 lot              |