



Bharat Heavy Electricals Limited
Heavy Electrical Equipment Plant, Haridwar-249403

Department: WEX-WCS

Tender Document

Name of Work: Retrofitting of CNC Machining Centre (Model No. NTH-200) Plan No. 2-354, TBM, B1-3, BHEL Hardwar.

Tender Enquiry No. : BHEL/HEEP/WEX-WCS/16-17/6180/20160154 Dt.23.01.17

Due date of Tender Opening : 03.03.2017

Techno-commercial Bid (Part-1)

Place of Submission of Tender / Bid: Tender Room, Purchase Deptt., 4th floor, Main Administrative Building, BHEL, HEEP, Haridwar-249403 (Uttarakhand)

Contact Person: Mr. Manish Kumar (Sr. Engineer, WCS)

Contact Address: ADM-4, Ground Floor, WEX-WCS, HEEP, BHEL, HARIDWAR

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Name of Tenderer:

Address:

Phone No:

Email ID:

Details of Tender Document

Name of Work: Retrofitting of CNC Machining Centre (Model No. NTH-200) Plan No. 2-354, TBM, BI-3, BHEL, Hardwar.

The Tender document has been detailed as Follows:

- (1) **Notice Inviting Tender ----- (Page:3)**
- (2) **Techno-commercial Bid (Part-1) ----- (Page:4-23)**

Sl.no.	List	Page No.
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- (3) **Price Bid (Annexure-B) (Part-2) ----- (Page: 21)**



NOTICE FOR TENDER (NIT)

BHARAT HEAVY ELECTRICAL LIMITED
HEEP, Haridwar-249403(UTTARAKHAND)

Name of Department	WEX-WCS		
Phone	+91-1334-284543/1332/1022	Fax	+91-1334-226460
Email Address	omanish@bhelhwr.co.in		
Contact Person	Manish Kumar (Sr. Engineer, WEX-WCS)		
NIT Key.	20160154	Dated :	23.01.17
NIT No.	BHEL/HEEP/WEX-WCS/16-17/6180/20160154 Dt .23.01.17		
NIT No. on www.bhel.com	31369		
NIT No. on www.bhelhwr.co.in	2448		

Type Of Tender	Open Tender		
#Tender Cost (in INR)	500/- (Exempted for valid MSME & tender downloaded from BHEL website)		
Estimated cost (FOB BHEL Haridwar basis)	-		
EMD (in INR)	82,720 /-		
Period of completion of work	12 month		
Two Part Bid /single bid	Two Part Bid		
NIT Value (in Rs.)	41.36 Lacs		
Last Date of Sale of Tender	02.03.2017	Time :	3:30 PM
Last Date of submission of Tender	03.03.2017	Time :	1:45 PM
* Date and Time for opening of Techno Commercial Bid	03.03.2017	Time :	2:00 PM
Place Of submission of Tender	Tender Room, Purchase Deptt., 4th floor, Main Administrative Building, BHEL , HEEP, Haridwar-249403 (Uttarakhand)		

*In case of two part bid, date of opening of Tender means the date of opening of Techno-commercial bid. However date of opening of price bid shall be intimated to technically qualified parties. If the due date of tender opening happens to be a holiday, the tenders will be opened on the next working Tuesday/Friday.

Tender cost & EMD shall be submitted either in form of cash receipt issued by cash section, BHEL, HEEP, Haridwar (subject to provision of Income tax act) or Demand draft issued by any nationalised bank in favour of **Sr. Accounts Officer (Cash), BHEL, HEEP, Haridwar** separately in two different envelopes superscribed as Tender cost and EMD respectively. However Tender cost is non-refundable.

Note: Tender Cost shall not be charged if tender documents is downloaded from BHEL website.

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Contracting Executive Name: Manish Kumar
Date:

- BHEL reserves the right to accept or reject any/ all application(s) without assigning any reason thereof.
- If any document submitted by tenderer found false at any stage, the tender/ work order will be cancelled immediately and the financial loss to BHEL if any in making alternative arrangement will be recovered from the contractor.
- BHEL will not be responsible for the loss or delay of tenders in transit in any case.
- All further corrigenda, addenda, amendments, time extensions, clarifications & etc. to the tender, if any shall only be notified on BHEL websites (www.bhelhwr.co.in, www.bhel.com) as applicable. Please visit our website before submitting your offer.
- For detailed instructions/information refer the tender document on BHEL website.

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Annexure-A

Scope for Retrofitting of CNC Machining Centre (Model No. NTH-200) Plan No. 2-354, TBM, Bl-3, BHEL Hardwar

Brief About Machine: This NTH-200 machining centre is M/s Starrag make machining centre for machining of Fir tree roots of LP Turbine blades. It has four spindles driven by a Single Spindle motor with automatic gear change between Low gear and High gear depending on commanded Spindle RPM. It has three axes X, Y, Z and an indexing table driven by hydraulic mechanism. This machining centre is presently run by Sinumerik 810GA3 CNC control which is to be retained. The feed drives are Inland make HPAR-6340 & Inland DC motors which are to be replaced. BBC make DC Spindle motor & Spindle drive is to be replaced. Existing measuring system in all three axes are Linear Inductosyn, Slider, Pre-amplifier & Inductosyn Converter which have to be retained.

Sl. No	Description	Quantity	Accepted (Yes/No)	Deviation	Remarks
1	MATERIAL SUPPLY INCLUDING SCOPE OF WORK				
1.1	<u>AC SERVO MOTORS</u>				
1.1.1	Suitable Siemens 1FT6/ 1FT7 AC servo motor with incremental encoder without holding brake for X axis with rated Torque (Mn) of 41 Nm or above and RPM more than or equal to 1200 RPM. Size constraints for the motor has to be accounted for considering the available space in the machine <u>Existing motor details are as under:</u> Inland DC Servo Motor Model no: TT 5302-100-A Constant (Stall) 15 V, 36.5 Amps, 30 Lb-ft Peak (Stall) 77 V, 200 Amps, 160 Lb-ft Maximum Operating RPM: 1200 DC Tacho voltage / 1000 rpm: 19V	01 No.			<u>Bidder to comply</u>

Signature of Tenderer with stamp

Opening Officer

Accounts Representative

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1.1.2	<p>Suitable Siemens 1FT6/ 1FT7 AC servo motor with incremental encoder with holding brake for Y axis with rated Torque (Mn) of 41 Nm or above and RPM more than or equal to 1200 RPM. Size constraints for the motor has to be accounted for considering the available space in the machine</p> <p><u>Existing motor details are as under:</u> Inland DC Servo Motor Model no: TT 5302-100-A Constant (Stall) 15 V 36.5 Amps 30 Lb-ft Peak (Stall) 77 V 200 Amps 160 Lb-ft Maximum Operating RPM: 1200 DC Tacho voltage / 1000 rpm: 19V</p>	01 No.			<u>Bidder to comply</u>
1.1.3	<p>Suitable Siemens 1FT6/ 1FT7 AC servo motor with incremental encoder without holding brake for Z axis with rated Torque (Mn) of 41 Nm or above and RPM more than or equal to 1200 RPM. Size constraints for the motor has to be accounted for considering the available space in the machine</p> <p><u>Existing motor details are as under:</u> Inland DC Servo Motor Model no: TT 5302-100-A Constant (Stall) 15 V, 36.5 Amps, 30 Lb-ft Peak (Stall) 77 V, 200 Amps, 160 Lb-ft Maximum Operating RPM: 1200 DC Tacho voltage / 1000 rpm: 19V</p>	01 No.			<u>Bidder to comply</u>
1.1.4	<p>Suitable Siemens AC asynchronous & Forced air cooled 1PH7/ 1PH8 spindle motor (having incremental encoder) with 22 KW or more rated Power & RPM more than or equal to existing motor. Size constraints for the motor have to be accounted for considering the available space in the machine.</p> <p><u>Existing motor details are as under:</u> DC Motor BBC (Brown Boveri) Type no: GN 160 L39 F Power: 22/ 22 KW Speed: 1000/3000 RPM Voltage: 400/400 Volts Current: 63/ 64 Amps Duty: S1 Excitation voltage: 300 V Ie: 4.6/ 1.0 Amps, IP 23</p>	01 No.			<u>Bidder to comply</u>
1.2	<u>AC SERVO & SPINDLE DRIVES</u>				
1.2.1	Siemens make Simodrive 611U/ Sinamics AC Servo drive for Feed motor control with input voltage of 415 VAC (+/- 10%), 3 phase 3 wire system.	01 No.			<u>Bidder to comply</u>

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1.2.2	Siemens make Simodrive 611U/ Sinamics AC drive for Spindle motor control with input voltage of 415VAC (+/- 10%), 3 phase 3 wire system.	01 No.		<u>Bidder to comply</u>
1.2.3	Vendor to include input transformer (if required)	01 No.		<u>Bidder to comply</u>
1.2.4	Servo drives to be provided with analogue speed reference input 0 to +/- 10 VDC	01 No.		<u>Bidder to comply</u>
1.2.5	IR / Active Line module of suitable capacity	01 No.		<u>Bidder to comply</u>
1.2.6	Line filter with HF Commutating Choke of suitable capacity. Maximum ratings of motors offered to be taken into account for calculating the ratings of the Modules.	01 No.		<u>Bidder to comply</u>
1.2.7	LT/ Single line module/ Double motor module of suitable capacity (for X, Y & Z axis motor)	01 Set		<u>Bidder to comply</u>
1.2.8	Suitably rated Braking Resistor (If required)	01 No.		<u>Bidder to comply</u>
1.2.9	LT/ Single line module of suitable capacity (for Spindle motor)	01 No.		<u>Bidder to comply</u>
1.2.10	Controller card/ Control unit for X, Y & Z axes feed drives & Spindle drive.	01 Set		<u>Bidder to comply</u>
1.2.11	Pre-assembled Encoder cables 15 meters or more for 1 FT6/ 1FT7 & 1 PH7/1PH8 motors	01 Set		<u>Bidder to comply</u>
1.2.12	Power cable 15 meters or above (for X & Z axis)	01 Set		<u>Bidder to provide details and comply</u>
1.2.13	Power cable with brake 15 meters or above (for Y axis)	01 No.		<u>Bidder to provide details and comply</u>
1.2.14	Power cable 15 meters or above (for Spindle motor)	01 No.		<u>Bidder to provide details and comply</u>
1.2.15	Input supply of 415VAC is available on the machine. If the installed system & Drives require any other rated supply then suitable rated supply transformer to be supplied by the vendor.	01 No		<u>Bidder to provide details and comply</u>
1.2.16	Shield terminal plates and earthing schematic for all the modules	01 Set		<u>Bidder to comply</u>
1.2.17	The AC Servo drive will have a common enable for the DC Link section and individual enables for the feed drives.			<u>Bidder to comply</u>
1.2.18	The AC Servo drive should provide potential free contacts for possible alarms, drive ready for interfacing with the CNC control.			<u>Bidder to comply</u>
1.2.19	Pre-assembled communication cable to connect laptop with the drives for commissioning and diagnostic purposes.	01 No.		<u>Bidder to comply</u>
1.2.20	Licensed Drives commissioning software (latest version) on CD/ DVD.	01 No.		<u>Bidder to comply</u>
1.2.21	Spindle drive is presently with uni-polar reference with CW/CCW contacts. The spindle drive needs to provide the following outputs as potential-free contacts: Drive ready, Spindle at standstill, No over-temperature and Actual speed= Set speed. These potential free contacts are required by the existing PLC program.	01Set		<u>Bidder to comply</u>

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1.2.22	Feed drives should be provided with 2 Digital Inputs, 2 Digital outputs & 1 Analog input per axis feed drive which includes drive ready potential free contact for evaluation by the existing PLC program.	01Set		<u>Bidder to comply</u>
1.3	<u>MEASURING SYSTEM:</u>			
1.3.1	The existing measuring systems of all three axes are Linear Inductosyn, Slider, Preamplifier & Inductosyn Converter. The existing linear feedback system of X, Y & Z Axis are Inductosyn (2mm cycle 250 mm long scale pieces), Slider (2mm 96 bar slider), Preamplifier & Inductosyn Converter. Axes traverse for X Axis is 1952 mm, Y Axis is 903 mm & Z Axis is 512 mm between software limits. Existing measuring system is to be retained.			<u>Information to Bidder</u>
1.4	<u>ELECTRICAL FEATURES</u>			
1.4.1	It is proposed that the existing electrical cabinets -3 Nos. of Size: (Height X Width X Depth) of 175 cm X 124 cm X 40 cm- 1no. and 175cm X 59 cm X 40 cm- 2 nos. are to be replaced with reputed make cabinets (No. of cabinets are to be supplied as per requirement). New electrical cabinets with suitable air-conditioner are to be supplied for the electrical items including Drives, LV switchgear etc. The maximum panel height should be 2 meters. The Electrical cabinets should be dust & vermin proof. No elements should be mounted on the back-side of the panel. Electrical cabinets should not have rear opening.	01 Set		<u>Bidder to provide details and comply</u>
1.4.2	The existing operator panel (CNC Cabinet) used for 810GA3 system need to be retained. Complete rewiring inside the operator panel need to be carried out by the vendor as per existing scheme.			<u>Bidder to comply</u>
1.4.3	L&T/Siemens/ABB/ Schneider Electric make MCCB of suitable capacity with rotary handle kit for switching on the power supply of panel & machine to be mounted on the outer left side of the panel.	01 No.		<u>Bidder to provide details and comply</u>
1.4.4	Suitable Semiconductor, HRC fuses, fuse bases of GE/ SIEMENS/ BUSSMANN make for overload protection.	01 Set		<u>Bidder to provide details and comply</u>
1.4.5	The complete LV switchgear of the machine including overloads, relays, contactors, MCBs etc. is to be supplied & interfaced by the vendor as per existing scheme.	01 Set		<u>Bidder to provide details and comply</u>
1.4.6	Electrical Cabinet to be equipped with a) Door limit switch operated panel tube lights with ON/ OFF switch b) 5 Amp 3-pin service socket and switch	03 Sets		<u>Bidder to provide details and comply</u>
1.4.7	DC Regulated Power Supply 24V DC, 20 Amps of Siemens/Phoenix/M-System for CNC system & Input/ Outputs	02 Nos.		<u>Bidder to provide details and comply</u>

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1.4.8	DC Regulated Power Supply 24V DC, 10 Amps of Siemens/Phoenix/M-System for machine elements.	02 Nos.		<u>Bidder to provide details and comply</u>
1.4.9	Sealed machine light of reputed make for machine illumination (220/24V) to be installed.	03 Nos.		<u>Bidder to provide details and comply</u>
1.4.10	Wires for rewiring of Control signal & Power cabling (including Cabling to Spindle & feed motors). Input Power Supply to the machine will be provided by BHEL. The vendor to note that the concerned portion of the machine has to be rewired. The cables also include the following:	01 Set		<u>Bidder to provide details and comply</u>
1.4.10.1	Pre-assembled Round I/O Cables from I/O board to Terminal strip converter (HMT Part no. 6FC9340-8X) or equivalent for CNC System 810 GA3 of 15 meters or more length as per requirement.	06 Nos.		<u>Bidder to provide details and comply</u>
1.4.10.2	Pre-assembled Cables for Feed drives from measuring board (HMT Part no. 6FC9340-8R) or equivalent of 15 meters or more length as per requirement.	02 Nos.		<u>Bidder to provide details and comply</u>
1.4.11	Vendor should provide the proposed electrical schematic along with bill of material to BHEL for approval prior to dispatch.	01 Set		<u>Bidder to provide details and comply</u>
1.4.12	Terminal boxes, screwed terminal blocks, bus bars, transformers etc. as required per the new electrical scheme should be provided of reputed makes viz. Wago, Phoenix contact etc.	01 Set		<u>Bidder to provide details and comply</u>
1.4.13	All existing Proximity switches, Limit switches, Pressure switches, Flow switches, Float switches shall be replaced with 24 VDC based elements of reputed makes. All Pressure switches & Flow switches should be with digital display for parameters and actual value display.	01 Set		<u>Bidder to comply</u>
1.4.14	4 colored signal light display (LED type) should be interfaced with PLC to show the operational status of the machine and visible from a distance.	02 Nos.		<u>Bidder to comply</u>
1.4.15	All existing operational features of the machine should be retained in the new electrical schematic of the machine.			<u>Bidder to comply</u>
1.4.16	Suitable door mounted air-conditioner of reputed make need to be installed on Electrical cabinets with door operated limit switch.	01 Set		<u>Bidder to comply</u>
1.5	OTHER FEATURES			
1.5.1	Design and supply of intermediate flanges, couplings and any other parts required for mounting of AC Servo motors (3 Nos.) & Spindle motor (1 No.).	01 Set		<u>Bidder to comply</u>
1.5.2	Lapp make hose pipes, DIN rails (5 meters), cable ducts (5 meters), insulated lugs(0.5, 1.0, 1.5 sq. mm 200 nos. each & 2.5, 4.0 sq. mm 100 nos. each), printed ferrules (0-9 of 1.0 & 1.5 sq. mm 200 each and A-Z of 1.0 & 1.5 sq. mm 100 each) and other material required for the wiring of machine and panel	01 Set		<u>Bidder to comply</u>

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1.5.3	Party shall supply all clamps, fixtures and fasteners required to complete the retrofitting job.	01 Set		<u>Bidder to comply</u>
1.5.4	Any other material not mentioned above but found necessary to complete the retrofitting job, shall be in party's scope of supply	01 Set		<u>Bidder to comply</u>
1.6	<u>MINOR MECHANICAL WORK</u>			
1.6.1	<u>X, Y & Z AXIS</u>			
1.6.1.1	The existing X axis ball screw and nut is to be replaced with new one which will be provided by BHEL. Y & Z axis ball screw and nut are to be retained	01 Set		<u>Bidder to comply</u>
1.6.1.2	Replacement of Ball-screw end support Bearings in X, Y & Z axis- (one pair on both the end). The existing bearings are a set of ZARN 50110 – 50/110 X 82 (Axial cylindrical roller bearing), 89312-60/110 X 30 (Axial cylindrical roller bearing) & NK 60/25 – 60/72 X 25 (Needle bearing) are to be replaced with new ones of FAG, RHP, TIMKEN, SKF, FAFNIR makes only. The bearings are to be supplied with same or better accuracy class & load ratings than the existing bearings.	03 Set		<u>Bidder to provide details and comply</u>
1.6.1.3	X, Y & Z axes (Transverse, Longitudinal & Vertical) Hydrostatic lubrication system has to be overhauled. The existing material on the machine has to be serviced and re-used. Vendor to provide and replace all oil seals used in the circuit. In case any material other than oil seals is necessarily required to be replaced, the same will be provided by BHEL.	01 Set		<u>Bidder to comply</u>
1.6.1.4	The Y axis is fitted with external electro-mechanical brake on the ball-screw and needs to be replaced with similar one of reputed make. All accessories of the brake required for mounting the brake are to be necessarily included. The existing brake details are ZF Electromagnetic Brake EB-EF 10 (24 VDC/ 76W).	01 Set		<u>Bidder to comply</u>
1.6.2	<u>INDEXING TABLE</u>			
	The machine is equipped with two position indexing table. The rotating motion of the table is hydraulic with the help of piston-cylinder and rack-pinion arrangement. The Indexing table is clamped hydraulically both axially and tangentially. Complete overhauling of indexing table including its clamping system. The existing material on the machine has to be serviced and re-used. The indexing table has positioning repeatability & leakage problem which has to be rectified by the vendor. Vendor to provide and replace all oil seals used in the circuit. In case any material or machining, other than oil seals is necessarily required to be provided, the same will be provided by BHEL free of cost.	01 Set		<u>Bidder to provide details and comply</u>

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1.6.3	<u>HYDRAULIC SYSTEM</u>				
	Complete reconditioning of hydraulic system. The existing material on the machine has to be serviced and re-used. Vendor to provide and replace all oil seals used in the circuit. In case any material other than oil seals is necessarily required to be replaced, the same will be provided by BHEL. All the existing hoses have also to be replaced with new one of same or more ratings.	01 Set			<u>Bidder to provide details and comply</u>
1.6.4	<u>LUBRICATION SYSTEM</u>				
	All axis ball screw with nut and their End support bearings are lubricated by shot lubrication system. The existing material on the machine has to be serviced and re-used. All the components like piston distributors, oil seals of the existing lubrication system are to be replaced with the equivalent one of same capacity and of reputed makes viz. Willy Vogel, SKF or Cenlub make. The existing logic of lubrication system is to be retained. Spindle carrier and gear unit is lubricated by a separate pump of 0.42 l/min capacity and is controlled by a pressure control valve and pressure switch. The whole system is to be overhauled. The existing material on the machine has to be serviced and re-used. All the components like oil seals of the existing lubrication system are to be replaced with the equivalent one of reputed makes. In case any material other than oil seals is necessarily required to be replaced, the same will be provided by BHEL. In case any material, machining or welding, other than oil seals is necessarily required to be provided, the same will be provided by BHEL free of cost.	01 Set			<u>Bidder to provide details and comply</u>
1.6.5	<u>CHIP CONVEYOR</u>				
	There is large amount of coolant leakage from chip conveyor. Chip conveyor has to be reconditioned by changing its damaged parts and stoppage of leakage. All the components like oil seals of the existing lubrication system are to be replaced with the equivalent one of reputed makes. The existing material on the machine has to be serviced and re-used. In case any material, machining or welding, other than oil seals is necessarily required to be provided, the same will be provided by BHEL free of cost.	01 Set			<u>Bidder to comply</u>
1.6.6	All pressure switches are to be replaced with 24VDC based models with digital display and two digital switching outputs of Parker, Hydac or IFM make.				

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2	COMMISSIONING:			
2.1	Party shall undertake commissioning of the supplied components at BHEL, Hardwar. All material required for commissioning of the system with the machine shall be supplied by the party free of cost and obligation.			<u>Bidder to comply</u>
2.2	Existing PLC program (S5) has to be modified (If required) to incorporate all the drive signals, all possible alarms, suitable interlocking and their display on CNC screen. The machine is fitted with Sinumerik 810GA3 control which has to be retained.			<u>Bidder to comply</u>
2.3	Existing machine logic and technological processes have to be retained.			<u>Bidder to comply</u>
3	FINAL ACCEPTANCE:			
3.1	Final Acceptance shall be at HEEP, BHEL, Haridwar after: a) Upon completion of the scope of supply and scope of work at BHEL. b) Final acceptance shall include clearance of all pending issues related to the work contract. c) Successful Commissioning & Demonstration of various cycles and control functions as envisaged in the technical scope. Party shall demonstrate operation of all parts of the system supplied along with all the features as specified above. d) Successful machining of presently being machined components as mentioned below: i. Fir-tree root milling operation on LP forge blades (5 nos. each for 'Form10.3' & 'Form17' blades). ii. The blank raw material, tooling & fixture for machining of the blades will be provided by BHEL. e) After settlement of all pending issues related to scope of supply and work, a certificate for Completion of work in all respect shall be released within 15 days by Production and Maintenance personnel of BHEL which will be the referred document for Final Acceptance and final payment to the Bidder.			<u>Bidder to comply</u>
4	<u>DELIVERY :(IF DELIVERY PERIOD IS NOT OFFERED/ ACCEPTABLE, OFFER WILL BE REJECTED)</u>			
	i) Material: 6 months from the date of release of work order. ii) Work: 4 months from the date of release of machine for work. The delivery period of work for the purpose of LD as per Clause 11 shall be considered from the date of start of work to the date of start of the machine after carrying out the work and start of the work on the first prove-out component. iii) Vendor to note that early delivery shall be acceptable. Vendor should take BHEL approval before invoking this clause.			<u>Bidder to provide details and comply</u>

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5	<u>DOCUMENTATION</u>			
	Following documents shall be supplied by the Party:			
5.1	Technical and Service manuals of the AC servomotors in hard copy.	03 Sets		<u>Bidder to comply</u>
5.2	Commissioning and service manuals of the AC servo drive in hard copy.	03 Sets		<u>Bidder to comply</u>
5.3	New electrical schematic of the machine in hard copy.	03 Sets		<u>Bidder to comply</u>
5.4	Instructions for data back-up & restoration for Feed drives in hard copy.	03 Sets		<u>Bidder to comply</u>
5.5	All documentation including Electrical Schematic, Commissioning & service manual, Documentation of all bought-out items , Feed Drive parameters & back-up on USB Hard disk (Min 1 TB)	01 No.		<u>Bidder to comply</u>
6	<u>SPARES: (TO BE COMPULSORILY QUOTED OTHERWISE OFFER WILL BE REJECTED) :</u>			
	Party shall compulsorily quote following spare parts:			
6.1	Line filter with Choke	1 Set		<u>Bidder to comply</u>
6.2	LT/ Single line module/ Double Motor module (for X, Y & Z axis motor)	01 no. of each type		<u>Bidder to comply</u>
6.3	LT/ Single line module (for Spindle motor)	01 No.		<u>Bidder to comply</u>
6.4	Controller card/ Control unit for X, Y, Z axes and Spindle	01 No. of each type		<u>Bidder to comply</u>
7	<u>WARRANTY:</u>			
	Party shall stand warranty for all the supplied material and work executed for a period of one year from the date of final acceptance (Ref.: Clause No. 3) of the machine at BHEL, Haridwar.			<u>Bidder to comply</u>
8	<u>TRAINING:</u>			
8.1	Party shall impart training to BHEL staff, for operation & maintenance of the Drive system supplied by them during installation & commissioning. Party to provide practical training on how to replace & synchronize the motor encoder using the drive software.			<u>Bidder to comply</u>
8.2	Vendor to arrange one week's training for Maintenance & commissioning of Drive system at OEM's works. Expenses for Boarding & Lodging of BHEL personnel during training shall be borne by BHEL.			<u>Bidder to comply</u>

Signature of Tenderer with stamp

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Name of Work: Retrofitting of CNC Machining Centre (Model No. NTH-200) Plan No. 2-354, TBM, NIT No : BHEL/HEEP/WEX-WCS/16-17/6180/20160153
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9	<u>VENDOR'S OBLIGATION:</u>				
	The Vendor shall bring all tools, tackles and testing equipments with them for successful commissioning of supplied system.				<u>Bidder to comply</u>
10	<u>QUALIFYING CONDITIONS</u>				
10.1	Average Annual financial turnover during the last 3 years, ending 31st March 2016, should be at least 12.41 Lacs. Vendor should submit Audited balance sheets and P & L for the last three years.				<u>Bidder to provide details & comply</u>
10.2	<p>The Vendor must have successfully retrofitted machines with Siemens 611U/ Sinamics S120 during last seven years ending 30th November 2016 and should be either of the following:</p> <p>a) Three projects of machines retrofitted with Siemens 611U/ Sinamics S120 with each project costing not less than 16.54 Lacs, OR</p> <p>b) Two projects of machines retrofitted with Siemens 611U/ Sinamics S120 with each project costing not less than 20.68 Lacs, OR</p> <p>c) One project of machines retrofitted with Siemens 611U/ Sinamics S120 with the project costing not less than 33.09 Lacs.</p> <p>The above retrofitted machines should be running satisfactorily for at least 6 months prior to 30th November 2016. 6 months period will be calculated on the basis of commissioning certificates provided.</p> <p>Vendor to provide P.O. / W.O copies and commissioning/ performance certificates for satisfactory operation of the above retrofitted systems along with name, address & contact details including e-mail IDs, telephone numbers of their customer. BHEL reserves the right to verify the information provided. Vendor is advised to attach only the relevant certificates and not attach papers irrelevant against this clause.</p>				<u>Bidder to provide details & comply</u>
11	<u>LATE DELIVERY PENALTY (LD) CLAUSE:-</u>				
11.1	<p>LD @ ½% per week subject to a maximum of 10% of the Material cost including spare parts shall be applicable for delay in deliveries.</p> <p>The time period from invitation date for Pre dispatch inspection from vendor to the date of arrival of Pre Dispatch Inspection Team to vendor's works and any other reasons attributed to BHEL will not be accounted for in delivery period. This period will be excluded for the purpose of calculating LD. Vendor should intimate regarding PDI 7 days in advance only.</p>				<u>Bidder to comply</u>
11.2	LD @ 2% per week subject to a maximum of 10% of the Commissioning Charges shall be applicable for delay beyond scheduled commissioning date as per Clause 4 ii) for reasons attributed to the party.				<u>Bidder to comply</u>

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12	<u>PRE-DISPATCH INSPECTION</u>			
12.1	Pre-dispatch inspection of all the items covered under Scope of Supply at Para (1) & spares at Para (6) shall be carried out by BHEL personnel at party's works.			<u>Bidder to comply</u>
12.2	Supplier shall invite BHEL for carrying out pre-inspection.			<u>Bidder to comply</u>
12.3	Deputed BHEL persons shall do pre acceptance of material under scope of supply at vendor works and give dispatch clearance.			<u>Bidder to comply</u>
12.4	Expenses of Boarding and lodging of BHEL personnel during PDI shall be borne by BHEL.			
13	<u>SUBMISSION OF BILL OF MATERIAL (BOM)</u>			
13.1	Before inviting BHEL for Pre-dispatch inspection, vendor shall submit to BHEL the Bill of Material (BOM) and proposed electrical drawing/ schematic for approval of Bill of Material (BOM).			<u>Bidder to comply</u>
14	<u>EARNEST MONEY DEPOSIT (EMD):</u>			
14.1	Vendors have to deposit the _____ as EMD. EMD may be accepted only in the following forms: (i) Cash deposit as permissible under the extant Income Tax Act (before tender opening). (ii) Electronic Fund Transfer credited in BHEL account (before tender opening). (iii) Banker's cheque/ Pay order/ Demand draft, in favour of HEEP, BHEL, Haridwar (along with offer).			<u>Bidder to comply</u>
14.2	EMD shall be converted to security deposit if the work is awarded.			<u>Bidder to comply</u>
14.3	EMD of unsuccessful bidders shall be refunded back normally within fifteen days of acceptance of award of work by the successful bidder.			<u>Bidder to comply</u>
14.4	EMD shall not carry any interest.			<u>Bidder to comply</u>
14.5	EMD by tenderer will be forfeited as per tender documents, if:			<u>Bidder to comply</u>
14.5.1	After opening the tender and within the offer validity period, the tenderer revokes his tender or makes any modification in his tender which is not acceptable to BHEL.			<u>Bidder to comply</u>
14.5.2	The tenderer fails to deposit the required Security deposit or commence the work within the period as per LOI/ Contract.			<u>Bidder to comply</u>
14.6	EMD by the tenderer shall be withheld in case any action on the tenderer is envisaged under the provisions of BHEL Guidelines and forfeited/ released based on the action as determined under these guidelines.			<u>Bidder to comply</u>

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14.7	Offers without EMD will be rejected and will not be considered for evaluation. However "MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (Format enclosed at Annexure -1 where deemed validity of EM II certificate of five years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer".				<u>Bidder to comply</u>
15	SECURITY DEPOSIT (SD):-				
15.1	Successful vendor shall deposit security. The total amount of Security Deposit will be 5% of the contract value.				<u>Bidder to comply</u>
15.2	The security deposit should be submitted before the start of work in the following forms:				<u>Bidder to comply</u>
	i) Cash (As permissible under the Income Tax Act)				<u>Bidder to comply</u>
	ii) Local cheques of Scheduled Banks (subject to realization)/ Pay Order/ Demand Draft/ Electronic Fund Transfer in favour of HEEP, BHEL, Haridwar.				<u>Bidder to comply</u>
	iii) Bank Guarantee from Scheduled Banks/ Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL.				<u>Bidder to comply</u>
15.3	Security Deposit shall not carry any interest.				<u>Bidder to comply</u>
15.4	EMD of successful tenderer can be converted and adjusted against the Security Deposit.				<u>Bidder to comply</u>
15.5	100% of the Security Deposit amount shall be refunded to the vendor after final acceptance of work. SD shall be released after the submission of Performance Bank Guarantee (PBG) by the vendor.				<u>Bidder to comply</u>
16	PERFORMANCE BANK GUARANTEE (PBG):				
16.1	Vendor shall be required to submit a Performance Bank Guarantee (PBG) for 10% of the total work order/ contract value which shall be valid for a period of 12 months from the date of final acceptance of the machine.				<u>Bidder to comply</u>
16.2	The PBG shall be submitted on a non-judicial stamp paper of value not less than `100/- issued by any one of the nationalized banks.				<u>Bidder to comply</u>

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17	PAYMENT TERMS: (Note: No advance payment shall be made to the vendor.)				<u>Bidder to comply</u>
17.1	Part payment will be made after completion of following milestones:				<u>Bidder to comply</u>
17.1.1	Payment of 80% of material cost along with 100% of all taxes & duties (Excise duty, CST/VAT as applicable) shall be payable after inspection & acceptance of material at HEEP, BHEL, Haridwar. Vendor to ensure that all relevant documents are submitted.				<u>Bidder to comply</u>
17.1.2	Final payment of balance 20% of material cost, 100% of commissioning charges including service taxes as applicable amount will be made after Final acceptance of the machine (As per Clause 3). The payment shall be made subject to submission of PBG as per "Para 16".				<u>Bidder to comply</u>
17.2	All the payments shall be made through e-payment after submission of following documents along with first bill.				<u>Bidder to comply</u>
17.2.1	E-payment form duly filled (Form will be provided by BHEL)				<u>Bidder to comply</u>
17.2.2	Income tax exemption letter (if applicable)				<u>Bidder to comply</u>
17.3	Excise duty & CST/VAT will be paid on material cost and service tax will be paid on commissioning charges at actual. Related original documents to be submitted for availing MODVAT credit by BHEL.				<u>Bidder to comply</u>
17.4	Timely submission of CENVATABLE invoices along with necessary documents to enable availment of CENVAT (Excise duty, Service Tax & VAT) credit by BHEL. Note: Wherever CENVAT credit cannot be availed within given time limit due to delay in submission of invoices or for any other reasons attributed to vendor, loss of such CENVAT credit will be recovered from such vendor.				<u>Bidder to comply</u>
17.5	Vendors should submit their invoices against goods and services immediately after supply of goods and services but not later than 30 days from the invoice date. In case of any delay, consequential losses like loss of input credit and non-availability of concessional forms etc. shall be to the vendor account.				<u>Bidder to comply</u>
18	Risk Purchase Clause: In case of delays in supplies / defective supplies or non-fulfillment of any other terms & conditions given in the work order the purchaser may cancel the work order in full or part thereof and may also make the purchase of the material / service from elsewhere / alternative source at the risk and cost of supplier. Vendor does not agree to above clause, their offer is liable to be rejected. In case any vendor accepts risk purchase clause initially and subsequently declines to honor the term in the eventuality of RISK PURCHASE, they may be banned for business with BHEL.				<u>Bidder to comply</u>

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19	GENERAL CONDITIONS:			
19.1	A point wise compliance statement shall be submitted by the party with reference to the above scope of supply against each clause/ sub-clause with relevant details & comments. Non-compliance to any of the clauses & quoting inadequate quantity can lead to dis-qualification of the offer.			<u>Bidder to comply</u>
19.2	The Vendor is advised to inspect the machine to ascertain all the relevant details required for successful completion of the work.			<u>Bidder to comply</u>
19.3	The proposed electrical schematic & Bill of Material for the machine shall be provided by the vendor prior to pre dispatch inspection.			<u>Bidder to comply</u>
19.4	Complete specifications such as part no./Model/Type, power, torque, Rated and maximum RPMs, Rated and maximum currents of the motor and drive controllers shall be stated in the offer by the party. Ordering brochure/catalogue should be attached wherever necessary.			<u>Bidder to comply</u>
19.5	Vendor must compulsorily quote the quantity exactly as per the Scope of supply. No reduction in quantity as per the above Scope of supply is permissible.			<u>Bidder to comply</u>
19.6	Vendor must quote the Spare parts separately in the offer otherwise the offer will be rejected.			<u>Bidder to comply</u>
19.7	The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site www.bhel.com			<u>Bidder to comply</u>
19.8	The award of works will be made on basis of the total of Material cost, Spare Parts cost, Commissioning charges and all taxes, duties as applicable (Cost to BHEL).			<u>Information to Bidder</u>
19.9	Vendor should submit their best price at this stage itself and they will not be allowed to revise the price. Any revision/ discount given by the vendor subsequently will be ignored.			<u>Information to Bidder</u>
19.10	Check List as per Annexure 'C' must be enclosed with techno-commercial bid.			<u>Bidder to comply</u>
19.11	The risk of delay/loss in transmission by post/courier rest with the bidder.			<u>Bidder to comply</u>
19.12	Conditional tender is likely to be rejected.			<u>Bidder to comply</u>
19.13	BHEL reserves the right to reject the lowest or any tender or accept any tender in full or in part without assigning any reasons whatsoever.			<u>Bidder to comply</u>
19.14	If any information/documents submitted by the contractor are found false/fake at any stage, the tender will be cancelled and earnest money deposited shall be forfeited debarring from the future participation in tenders.			<u>Bidder to comply</u>
19.15	In case more than one contractor quotes equal L-1 rates, lottery shall be drawn among L-1 parties to decide one L-1 party.			<u>Bidder to comply</u>

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 B1-3, BHEL Hardwar. DT.23.01.17

19.16	Vendor must note that all the retrofitting and minor mechanical work in the scope of this tender, has to be carried out at BHEL works only. Vendor will not be allowed to transport the complete machine or major assemblies outside BHEL works. Therefore, vendor is advised to inspect the machine before bidding to collect & ascertain all the relevant details required for successful completion of work. Vendor to note that all work has to be carried out in BHEL works. In case some material is necessarily required to be taken out of BHEL works, vendor to note that BG as decided by BHEL will be required to be submitted.			
20	<u>BHEL'S OBLIGATION:</u>			
20.1	Existing electrical schematic of the machine shall be provided by BHEL to the vendor.			<u>Bidder to comply</u>
20.2	Crane facility along with lifting tackles, trolleys etc. will be made available free of charge while working in BHEL premises only.			<u>Bidder to comply</u>
20.3	Facilities of minor welding, brazing, minor machining limited to fitting work /rework etc. will be made available free of cost inside BHEL premises subject to availability.			<u>Bidder to comply</u>
20.4	Any civil work required for the erection of panel shall be done by BHEL.			<u>Bidder to comply</u>
20.5	Consumables like lubricants, kerosene oil, cotton waste etc. will be supplied free of cost by BHEL during execution of works inside BHEL premises. Contractor should make his own arrangements for all types of hand tools including pneumatic/electrical drill machines, grinders, scraping tools along with the general purpose measuring instruments, straight edges etc.			<u>Bidder to comply</u>
21	<u>OFFER :-</u> The offer should be submitted in two parts and in following manner.			
21.1	<u>Techno-commercial Bid :</u>			
21.1.1	The envelop shall contain the Techno-commercial Bid (ANNEXURE 'A') with technical details and commercial terms & conditions along with relevant documents like copies of ESI, PF code, PAN No., Service Tax Regn. No., TIN No., CST No., Experience Certificates, Audited Balance Sheet of last 3 years, P.O copies & Commissioning/ Performance certificates (against Pre-qualifying conditions), Tender fees, EMD and Check List as per ANNEXURE 'C' .			<u>Bidder to comply</u>
21.1.2	The envelop shall be super scribed with "Techno-Commercial Bid", Name of work & NIT No.			<u>Bidder to comply</u>

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21.1.3	Point-wise compliance of this scope of supply and work is to be given by vendors while submitting their techno-commercial offer in the format provided by BHEL. Each page of the compliance list has to be signed and stamped by the vendor. Documents submitted along with the offer shall be signed and stamped in each page by authorized representative of the bidder.			<u>Bidder to comply</u>
21.1.4	The vendor must note that no prices are to be quoted/ mentioned in the techno-commercial offer. Vendor must include un-priced Price bid.			<u>Bidder to comply</u>
21.2	<u>PRICE BID :</u>			
21.2.1	The second envelope shall contain only the price bid with separate price for material, spares, work & applicable taxes & duties on Price Bid Format only as per ANNEXURE 'B' .			<u>Bidder to comply</u>
21.2.2	Any other information in the price bid shall not be considered and the quotation is likely to be rejected. Price bid document shall be signed and stamped by authorized representative of the bidder at the bottom of the page.			<u>Bidder to comply</u>
21.2.3	The envelope shall be sealed and super scribed with "Price Bid", Name of work & NIT No.			<u>Bidder to comply</u>
21.2.4	Price bids of techno commercially accepted vendors shall be opened.			<u>Bidder to comply</u>
21.3	Vendor should submit their best price at this stage itself and they will not be allowed to revise the price. Any revision/ discount given by the vendor subsequently will be ignored.			<u>Information to Bidder</u>
21.4	Both the above two envelopes shall be kept in another sealed cover. The cover shall be super-scribed with "Quotation for (name of work), NIT No. & due date and shall be submitted in the Tender Box kept in the Tender room of Purchase department at the 4th floor of the Main Administrative Building of BHEL,HEEP,HARIDWAR and it should also contain the Bidder's address.			<u>Bidder to comply</u>
21.5	In case the date of tender opening happens to be a BHEL declared holiday, tenders shall be opened on the next working day.			<u>Information to Bidder</u>
22	<u>COMMERCIAL TERMS:</u>			
22.1	Prices shall be quoted on " Firm Price " basis only. The prices should be on F.O.R BHEL, Haridwar basis inclusive of Packing & Forwarding, transit insurance & Transportation charges. Applicable % of ED & Sales Tax, Installation/ Commissioning Charges & Service Tax should be clearly indicated in attached Price bid format as per "Annexure B"			<u>Bidder to comply</u>

Signature of Tenderer with stamp

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22.2	Validity of offer shall be for a minimum period of 120 days from the date of Tender Opening.			<u>Bidder to comply</u>
22.3	Freight & transit insurance charges from Dispatching station to BHEL, Haridwar shall be borne by the party.			<u>Bidder to comply</u>
22.4	The material will be dispatched to Central Plant Stores, HEEP, BHEL, Haridwar with instructions to forward the same to Shri Rakesh Das, Sr. Engineer (WEX/CNC-BLADES), HEEP, BHEL, Haridwar-249403.			<u>Bidder to comply</u>
23	<u>PACKING:</u> Supplier shall arrange for adequate protection and packing of the consignment so as to avoid loss and damage during transit and also take appropriate measures to prevent metal parts from rusting and corrosion during transit. Handling instructions shall be clearly printed /painted on the packages. Each package should carry a detailed packing slip. Supplier shall be responsible for any loss/damage during transit due to defective/inadequate packing.			<u>Bidder to comply</u>
24	<u>REVERSE AUCTION:</u> "BHEL reserves the right to go for Reverse Auction (RA) (Guidelines as available on www.bhel.com) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. Bidders to give their acceptance with the offer for participation in RA. Non-acceptance to participate in RA may result in non- consideration of their bids, in case BHEL decides to go for RA.			<u>Bidder to comply</u>

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ANNEXURE 'B' (PRICE BID FORMAT)

Name of Work : : Retrofitting of CNC Machining Centre (Model No. NTH-200) Plan No. 2-354, TBM, BI-3, BHEL Hardwar.

NIT No. & Date : BHEL/HEEP/WEX-WCS/16-17/6180/20160153 DT.23.01.17

Bidder's Offer No. & Date :

Sl. No.	Description of item	Unit	Qty	Basic Rate (in Rs)	Excise Duty (in %)	VAT/CST (in %) (VAT with FORM-17 or CST with C-FORM)	Service Tax (in %)	Total Value (in Rs)
1	Material	Set	01	Rs	%	%		Rs
2	Spares	Set	01	Rs	%	%		Rs
3	Installation & Commissioning	Set	01	Rs			%	Rs
TOTAL COST (in Figures)								Rs
TOTAL COST (in Words) :								

Note: Bidder may please note that all relevant columns should be duly filled up and in case any column is left blank it will be considered as inclusive in the prices quoted. All pages to be duly signed and stamped by authorised signatory.

Signature of Tenderer with stamp

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Annexure 'C'

CHECK LIST FOR TENDER

NIT No. : BHEL/HEEP/WEX-WCS/16-17/6180/20160153 DT.23.01.17

Bidder shall ensure that following documents / particulars have been enclosed with tender. This check list shall be enclosed with Techno-commercial Bid.

S. No.	Particulars	YES/NO	REMARKS
1.	Sealed Techno-commercial Bid with Un-priced price bid as per Annexure 'A' of NIT		
2.	Sealed Price Bid as per Annexure 'B' of NIT		
3.	Compliance to all the points of the Annexure 'A' of NIT		
4.	Audited balance sheets for the last three years should be submitted i.e. 2015-16, 2014-15 & 2013-14 required as per Clause 10.1 of Annexure 'A' of NIT		
5.	P.O. copies and Commissioning/ Performance certificates required as per Clause 10.2 of Annexure 'A' of NIT		
6.	Name, address & contact details of their customer required as per Clause 10.2 of Annexure 'A' of NIT		
7.	Tender Fee enclosed		
8.	Earnest Money Deposit (EMD) required as per Clause 14 of Annexure 'A' of NIT		
9.	Complete specifications such as Part no. / Model / Type of Drive and Servo motors, power, torque, Rated and max. RPMs, Rated and max. currents of servo motors. Ordering brochure/catalogue should be attached required as per Clause 19.4 of Annexure 'A' of NIT		
10.	Certificate by Chartered Accountant on Letter Head (if applicable) required as per Clause 14.7 of Annexure 'A' of NIT		

Signature of Tenderer with stamp

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ANNEXURE-'1'

Certificate by Chartered Accountant on Letter Head

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

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

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

Rs. Lacs

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

Rs. Lacs

(Strike off whichever is not applicable)

The above investment of Rs..... Lacs is within permissible limit of Rs.....Lacs for..... (Micro/ small) (Strike off whichever is not applicable) category under MSMED Act 2006.

Or

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

Date:

(Signature)

Name-

Membership No.-

Seal of Chartered accountant