Bharat Heavy Electricals Limited
Ramachandrapuram : : Hyderabad – 502032
M&S – DIVISION
SCOPE OF WORK (ANNEXURE-I)

Tender No.: M&S/P&S/2022/46, dt.: 30.09.2022
Name of Work: Laser Calibration of CNC machines (8 Nos.) in NBS and NGT shops.

DESCRIPTION OF WORK:

1. Carrying out Laser calibration of Linear axes using Laser Interferometer & Rotary Axes using suitable standard equipment at BHEL, Ramachandrapuram, Hyderabad works for a total of 8 CNC Machines of NBS & GT Shops.
   The calibration shall include:
   (a) Positional Accuracy tests for Linear Axes and Indexing Accuracy tests for Rotary Axes
   (b) Repeatability tests for Linear & Rotary Axes
   (c) Reversal Error (Backlash) tests for Linear & Rotary Axes
   The reference standard to be followed shall be VDI 3441 - Linear method.
2. Incorporating the compensation values for Pitch error & Backlash in the CNC systems. The Vendor should quote for the complete work (i.e., for all the axes of all the machines as mentioned below) as a LUMPSUM amount. Taxes as extra will be applicable. As the quoted prices will be on Lumpsum basis, no additional amount is payable by BHEL to the Vendor for any extended hours/days or for any other reasons.
3. Vendor should bring equipment/instruments on his own for carrying out the above work. The calibration equipment shall have traceability to National/International standards and valid evidence shall be furnished by the vendor.
4. For each machine, two hard copies of color printout (neatly binded) of the complete calibration report with Statistical tables etc. for each axis to be submitted after calibration and the soft copy (color) of the total report is to be given in a DVD.
5. The calibration equipment linear & rotary devices shall have traceability to National/International standards and valid evidence shall be furnished by the vendor. Non-compliance to this clause is liable for rejection.
6. Details of axes of machines to be calibrated are as under:

S.No.	MACHINE	ASSET NO.	CNC SYSTEM	AXIS & TYPE	STROKE LENGTH
1	LIECHTI-2 (g-mill 550 Twin)	2012329	SIEMENS 840D	X : LINEAR	800mm
				Y : LINEAR	370mm
				Z : LINEAR	600mm
				A1 : ROTARY	360deg
				A2 : ROTARY	360deg
				B : ROTARY	(-260deg to 80deg)

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S.No.	MACHINE	ASSET NO.	CNC SYSTEM	AXIS & TYPE	STROKE LENGTH
2	LIECHTI-3 (g-mill 550 Twin)	2012330	SIEMENS 840D	X : LINEAR	800mm
				Y : LINEAR	370mm
				Z : LINEAR	600mm
				A1 : ROTARY	360deg
				A2 : ROTARY	360deg
				B : ROTARY	(-260deg to 80deg)
3	STARRAG HX253-2 (STARRAG HECKERT HX-253)	2012332	SIEMENS 840D	X : LINEAR	1235mm
				Y : LINEAR	400mm
				Z : LINEAR	400mm
				A : ROTARY	(-90deg to 40deg)
				B : ROTARY	360deg
4	STARRAG LX151 (STARRAG HECKERT LX-151)	2012333	SIEMENS 840D	X : LINEAR	1235mm
				Y : LINEAR	400mm
				Z : LINEAR	400mm
				A : ROTARY	360deg
				B : ROTARY	(-90deg to 90deg)
5	BFW-113 (HMC 650a; 630X630)	2012303	SIEMENS 840D	X : LINEAR	1000mm
				Y : LINEAR	850mm
				Z : LINEAR	1000mm
				B : ROTARY	360deg
6	BFW-115 (HMC 650a; 630X630)	2012305	SIEMENS 840D	X : LINEAR	1235mm
				Y : LINEAR	400mm
				Z : LINEAR	400mm
				B : ROTARY	360deg
7	BFW-191 (HMC 440a; 450X450)	2012301	SIEMENS 840D	X : LINEAR	650mm
				Y : LINEAR	650mm
				Z : LINEAR	680mm
				B : ROTARY	360deg
8	FPT HBM	2017012	SIEMENS 840D	X : LINEAR	11000 mm
				Y : LINEAR	4000 mm
				Z : LINEAR	1500 mm
				W : LINEAR	900 mm
				V: LINEAR	2500 mm
				B : ROTARY	360deg

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