

**BHARAT HEAVY ELECTRICALS LIMITED**

CORPORATE RESEARCH & DEVELOPMENT DIVISION

VIKASNAGAR, HYDERABAD - 500 093, INDIA

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RD:DP:MPX:F-04

ENQUIRY

To - Enquiry No: 500990031 Enq Date: 17-APR-09 Due Date: 26-MAY-09 Delivery By:

Pin - PLEASE SUBMIT YOUR QUOTATION IN SEALED COVER SUPERSCRIBED WITH ENQUIRY NO, ENQUIRY DATE AND DUE DATE SUBJECT TO OUR TERMS AND CONDITIONS ENCLOSED, FOR THE FOLLOWING MATERIALS SO AS TO REACH US ON OR BEFORE THE DUE DATE BY 12 NOON. THE TENDERS WILL BE OPENED AT 2 PM ON THE SAME DAY

Email : .

Attn. .

PLEASE GIVE REFERENCE OF ENQ NUMBER , ENQ .DATE AND DUE DATE IN ALL YOUR CORRESPONDENCE FOR PROMPT ACTION. IN CASE IF YOU ARE NOT MAKING THE OFFER PLEASE POST A REGRET LETTER AND RETURN THE DOCUMENTS.

SL NO	DESCRIPTION / SPECIFICATION	UNIT	QTY
1	CAD DESIGN TOOLS	SET	1
2	MESH GENERATOR	SET	1
3	CFD ANALYSIS SOFTWARE	SET	1
AS PER ENCLOSED SPECIFICATION NO. COECP-ES 11 REV.1			

Please submit your offer in Two parts as per enclosed "General Terms and Conditions of enquiry & Contract for the purchase of Goods/ Services" in separate sealed covers as detailed below:

- 1) First cover shall contain a) Technical & Commercial bid, b) Compliance Statement, c) Un-priced Price bid, i.e. a copy of the Price bid with the price(s) columns left blank.
 - 2) Second Cover containing Price bid.
- If the Price bid is found to be different from the un-Priced Price bid in any way, the offer will be rejected.
- 3) GUARANTEE CERTIFICATE: REQUIRED

Note:

- 1) ALL OFFERS MUST INCLUDE NAME OF CONTACT PERSON, PHONE NO, FAX NO, EMAIL ID. UNSIGNED/INCOMPLETE OFFER(S) ARE LIABLE FOR REJECTION.
- 2) Taxes & Duties quoted will be taken for cost evaluation & order placement and no change will be entertained later except in the case of changes made by the Government.
- 3) Changes in Taxes and Duties because of the changes in Turnover etc. will be to the supplier's account.
- 4) In case any Taxes/duties exempted, a self declaration for the same may be attached to the offer.

AS WE ARE ENGAGED IN R&D ACTIVITY "C" FORM WILL NOT BE ISSUED


Yours faithfully
for

PLEASE FILL UP THE ENCLOSED VENDOR REGISTRATION FORM AND SEND IT ALONG WITH YOUR QUOTATION. OTHERWISE YOUR QUOTATION WILL NOT BE CONSIDERED. (IGNORE THIS IF YOU HAVE ALREADY SUBMITTED THIS FORM)

BHARAT HEAVY ELECTRICALS LTD

KAKKAR PK
Sr Manager


Email: pkkakkar@bhelrnd.co.in

	PURCHASE SPECIFICATION	Rev. 1
	<u>CAD Tools, Meshing and CFD analysis Software</u>	Dt. 3.4.2009
	Item Code No. ES -11	Specification No. COECP_ ES11

S.No.	Technical Specifications
1	General This specification covers the detailed requirement for supply of softwares for CAD modeling, mesh generation, pre and post processors along with the flow solver. The scope includes successful installation, testing, commissioning & handing over to BHEL complete with all major software components of latest configurations for a trouble free operation of the software. The successful vendor shall also help in the preparation of specifications for procurement of suitable hardware for software installation.
2.	SCOPE OF SUPPLY Vendor's scope of supply shall cover the following: <ol style="list-style-type: none"> CAD interface for 3 D Modeling and mesh generation for turbo machinery applications Pre Processor for CFD Solver CFD solver for internal flow through trubomachinery stages and components Post processor
3	Detailed Technical requirements
3.1	<i>CAD and 3 D geometry Tools</i> <ul style="list-style-type: none"> Ø System should be capable of 3D modeling of the complete layout of all types of pumps and compressor applications/ studies pertaining to flow dynamics including but not limited to following capabilities: <ul style="list-style-type: none"> • Optimization of head losses, • Cavitation modeling Ø The preprocessors (design tool and the mesh generator) shall have the following capabilities <ul style="list-style-type: none"> • The tool should have the design mode options (eg. Angle /thickness mode- e.g. NACA thickness profile, spanwise distribution modes, pressure side/ suction side mode, transform between angle thickness mode and pressure side suction side mode) • Other options such as meridional profiles, curve options • Should have auxiliary view options for geometric diagnostics • Data import options: IGES and such similar formats • Data export option: IGES and such similar formats, Point data format • Should support standard user IO format – Simple RTZT, machine file, S1/S2 stacking format Blade geometry should be able to export for common preprocessing tool for CFD meshing as well as Mechanical meshing with minimum data losses
3.2	<i>Mesh generation, Editing and Controls</i> <ul style="list-style-type: none"> • Grid Connectivity checks • Grid Quality checks • Mesh smoothing • Mesh repair tools • Edges • Merge volume meshes • Merge nodes • Mesh splitting • Node movement • Offset mesh • Generation of Hexahedral mesh • Adjust mesh density • Renumber mesh • Variable mesh thickness • Re-orient mesh

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Prepared by	BR Manohar	Approved by	A Dasgupta
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	<ul style="list-style-type: none"> Delete elements/nodes Default sizing Mesh scaling Part-based sizing controls Surface-based sizing controls Curve-based sizing controls Density regions Surface mesh type settings Surface mesh method settings Thin/internal wall settings Inflation controls for sizing and collision handling <ul style="list-style-type: none"> Swept meshing controls Periodicity settings for translation/rotation <p>Automatic Meshing</p> <ul style="list-style-type: none"> Surface meshing <p>Solver support</p> <ul style="list-style-type: none"> Export for: various solver <p>Blocked hex meshing</p> <ul style="list-style-type: none"> Geometry-independent approach Structured grid output <p>Geometry</p> <ul style="list-style-type: none"> Solid modeling tools (at least primary) Minimum Surface-based modeling tools Geometry repair tools Faceted data editing tools Automatic mid-surfacing (constant/variable) Feature detection/removal Shrink-wrapping <p>CAD Readers</p> <ul style="list-style-type: none"> IGES Parasolid <p>Mesh Capabilities</p> <ul style="list-style-type: none"> Non-conformal (non-matching) mesh interfaces including fluid/solid interfaces. Mesh smoothing, improvement & manipulation tools. Grid checking (validity, quality, size) and reordering utilities Grid-to-grid solution interpolation capability
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3.3	<p>CFD solver</p> <p>The CFD Solver should have the following capabilities:</p> <ul style="list-style-type: none"> CFD flow Simulation for a complete compressor & Pump study and analysis. 3D flows Steady-state flows transient flows All speed regimes (low subsonic, transonic, supersonic) Laminar, and turbulent flows
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	<ul style="list-style-type: none"> Full range of turbulence models (K-epsilon, SST, RSM, DES, SAS, LES, Spalart-Almaras etc.) with predictive transition model. Multiphase model capability including Cavitation model and wet steam Multiple reference frame (MFR): Moving mesh capability for modeling flow around moving objects with capabilities for sector or full model calculations (both transient and steady state) Provision for running single and multi stage simulation for unsteady turbomachinery applications in a short time (say few hours) Volumetric source of mass, momentum, heat Material property database (Newtonian, real fluid) Automated pre & post processing capability for turbo machinery applications <p>Numerical Method</p> <ul style="list-style-type: none"> Solution for Navier Stokes equation using pressure/density based coupled solver <ul style="list-style-type: none"> Element based finite-volume method based on fully structured meshes Adaptive time stepping option for implicit schemes Dynamic memory allocation Coupled solution for all mean flow quantities Solution of turbulence and user defined scalar transport equations First order and second-order implicit time discretization schemes <p>Boundary Conditions</p> <ul style="list-style-type: none"> Code should have the following boundary conditions: <ul style="list-style-type: none"> Inlets, outlets, Opening (bi-directional) flow Walls Symmetries Periodic <p>Material Properties</p> <ul style="list-style-type: none"> Constant or variable fluid properties including temperature and composition dependence Comprehensive database containing material properties for standard fluids (user-modifiable), including steam Custom database creation for storing material properties <p>User-Defined Functions</p> <ul style="list-style-type: none"> Access to memory for user-defined functions Definition of custom physical properties User-defined density for compressible liquid modeling Customized boundary/initial conditions User-defined scalar transport equations Creation of custom post processing variables <p>Parallel Processing Parallel processing on shared and distributed memory systems</p>
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3.4	<p>Post Processing</p> <ul style="list-style-type: none"> Fully interactive graphical and text-based user interfaces Flexible units specification (SI units, British units, custom/mixed units) in post process Computation, reporting, and monitoring of surface/volume integrals and averages Calculator utility for user-defined (custom) field functions Calculation of gradients (vector and scalar) and derived quantities graphs of geometric and solution data Vector plots for velocity field and user-defined vector fields
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	<ul style="list-style-type: none"> Contour plots on boundary surfaces and user-specified surfaces Pathlines (streamlines) XY-plots Phase-specific post processing for multiphase flows Graphical probing of data Interactive sweeping of planes through the solution domain Automated animation creation tools On-screen mouse-based view manipulation (rotation, translation, magnification) Extensive hardcopy options Automated report generation option with turbo specific report generation option Turbo specific Post processing <p>Interface, Graphics and Reporting</p> <ul style="list-style-type: none"> Summary reports of solver and physical model settings Dynamic interrupt and restart of calculations & modification Residual reporting and display Reporting and monitoring minimum and maximum values Reporting and monitoring of forces and moments Time-average and RMS statistics <p>Export /Import</p> <ul style="list-style-type: none"> Export of solution data to ANSYS mechanical package with minimum data loss Data export in ASCII format (CSV and space-delimited) Data import from the various existing standard formats like CGNS format etc
3.5	<p>On-Line Help and Documentation</p> <ul style="list-style-type: none"> Should be able to provide context sensitive help. Complete on-line documentation User guide, including underlying theories and applications Tutorial guide, with model-specific examples User-defined functions manual Text user interface manual Validation manual Online access to the User service centre
3.6	<p>Supported Hardware</p> <ul style="list-style-type: none"> All major UNIX workstations: Sun, SGI, HP, IBM, DELL etc. Microsoft windows XP / Vista on latest configured PCs, CCS Fully functionality on all platforms.
3.7	<p>Optional Items</p> <p>The vendors may quote for the following as optional items. BHEL reserves the option either to procure or not at the time of placement of order</p> <ul style="list-style-type: none"> Ø Initial sizing and modeling tool Ø CAD associatively with Unigraphics, Ideas

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4.	<p>Sample Problem:</p> <p>All the vendors are requested to submit the solution for the sample problem given in the annexure along with the technical bid. BHEL reserves the option to reject the bid if the solution is not enclosed to the technical bid. The vendor is required to analyse the problem for impeller alone. The required data like geometric parameters, fluid parameters, impeller blade co-ordinates are given in the annexure. The output after analysis shall be presented in the form of a plot showing the variation of Polytropic efficiency and pressure ratio with mass flow rate (mass flow varying from 60% to 110% design flow) The vendors are advised to contact BHEL for any additional clarifications.</p> <p>The results of the sample problem will form the basis for technical suitability.</p>
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General conditions:

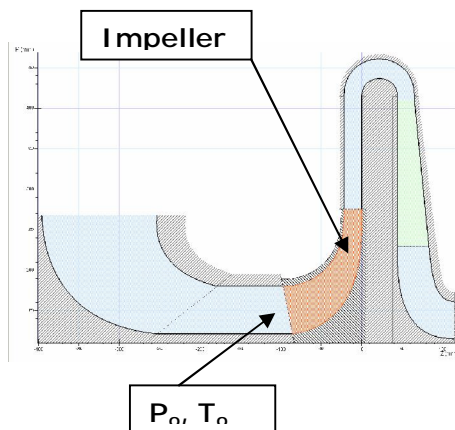
1. The vendors are requested to interact with the user group before submission of the quotation to make sure that the specifications are understood.
2. A demo package with the solved sample problems should be made available within a week from the date of opening of technical bid for 2 weeks in BHEL so as to evaluate the same.
3. Methods of validation of results from the offered software to be spelt out in the technical bid.
4. The packages should be warranted and supported for a period of at least one year. During this period, the updates and support services for all the modules shall be provided by the vendor free of cost.
5. The amount of annual maintenance charges payable after the first year, for subsequent 5 years should be spelt out clearly and they would be binding during the tenure by an agreement.
6. The software shall be used on Local Area Network (LAN) and the license should be single user floating type. **The users shall also be able to use the modules independently.** Vendors to confirm the same in the technical bid.
7. Microsoft windows environment shall be used for the operating system. However vendor has to specify the OS requirements and the hardware configuration in the technical bid.
8. The hardware configuration shall be suggested by the vendor along with the technical bid and BHEL shall furnish the final specifications of the hardware at the time of placement of order. The vendor is responsible for the installation and commissioning of the software in the hardware platform.
9. Multicore capability for enhanced process speed of the solver should be quoted separately as an option if applicable.
10. Vendors shall offer their quotation for the scope detailed above. However BHEL reserves the option of placing the order, for either the entire scope or part there of. Hence vendors are advised to offer quotation segment wise
11. The vendors are required to submit the quotation in two parts- Part A : Technical bid and Part-B: price Bid. Unpriced price bid to be enclosed to the technical bid.
12. Vendors to provide a technical compliance statement along with the technical bid.
13. Free training to working engineers for duration of 3 days.
14. Software deliverable include host of User documentation and host of tutorials

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Annexure

1.	Impeller Type / Direction of rotation	3 D / counter clockwise
2	Speed (RPM)	8506
3	Mass Flow rate (Kg/s)	9.56
4	Inlet Pressure P_o (Pa)	150021.4
5	Inlet Temperature T_o (Deg C)	45
6	Exit Temperature (Deg C)	93.3
7	Stage Power (kW)	421.33
8	Gas Constant kJ/ kg deg K	201.21
9	Ratio of specific heats	1.28
10	inlet hub radius (mm)	121.5000
11	Inlet shroud radius (mm)	180.3693
12	inlet blade angle (deg)	Hub Mean Tip
		-53.89 -58.67 -61.30
13	Number of blades	21.0
14	Inlet blade thickness (mm)	4 mm
15	Leading edge angle at inlet (deg wrt axial)	70
16	Exit radius (mm)	275.80
17	Exit width (mm)	22
18	Impeller exit blade angle (Deg)	-30



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Table No. A Impeller Blade Co-ordinates (Pressure Surface)

point	0.00% (mm)			25.00% (mm)			50.00% (mm)			75.00% (mm)			100.00%(mm)		
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
1	-0.34077	121.611	-85.0487	-0.43496	136.291	-87.8866	-0.52914	150.971	-90.7245	-0.62332	165.652	-93.5624	-0.7175	180.332	-96.4003
2	-3.57477	121.922	-82.218	-3.59037	136.505	-85.3211	-3.61039	151.093	-88.4121	-3.6366	165.684	-91.4908	-3.67083	180.279	-94.5572
3	-6.76708	122.257	-79.3508	-6.71851	136.737	-82.7281	-6.67491	151.226	-86.0803	-6.64043	165.723	-89.4066	-6.6194	180.229	-92.7067
4	-9.87599	122.641	-76.4106	-9.79211	137.002	-80.0802	-9.706	151.38	-83.7097	-9.62537	165.776	-87.297	-9.55847	180.186	-90.8413
5	-12.8598	123.098	-73.3608	-12.7839	137.317	-77.35	-12.6869	151.568	-81.2809	-12.582	165.847	-85.1494	-12.4833	180.153	-88.9537
6	-15.686	123.65	-70.1751	-15.6703	137.7	-74.5148	-15.6021	151.799	-78.7764	-15.5011	165.945	-82.9516	-15.3892	180.134	-87.0365
7	-18.3677	124.316	-66.8786	-18.4541	138.164	-71.5851	-18.4495	152.085	-76.1975	-18.3791	166.077	-80.7006	-18.2729	180.133	-85.0854
8	-20.932	125.11	-63.5118	-21.1498	138.723	-68.5866	-21.2353	152.437	-73.5581	-21.2173	166.25	-78.4014	-21.1332	180.154	-83.1001
9	-23.4059	126.048	-60.1153	-23.7721	139.391	-65.5448	-23.9659	152.865	-70.8719	-24.0172	166.471	-76.0594	-23.9689	180.202	-81.0802
10	-25.8085	127.141	-56.7187	-26.3331	140.18	-62.4821	-26.6474	153.38	-68.1523	-26.7804	166.75	-73.68	-26.779	180.283	-79.0256
11	-28.1486	128.395	-53.3372	-28.8383	141.097	-59.4114	-29.2826	153.991	-65.4087	-29.5075	167.093	-71.268	-29.5623	180.401	-76.9365
12	-30.434	129.815	-49.9847	-31.2916	142.151	-56.3435	-31.8728	154.706	-62.6484	-32.1985	167.508	-68.8274	-32.3179	180.562	-74.8138
13	-32.6738	131.404	-46.6761	-33.6974	143.347	-53.2898	-34.4194	155.533	-59.8788	-34.853	168.004	-66.3623	-35.0448	180.774	-72.6591
14	-34.8803	133.159	-43.4289	-36.0627	144.689	-50.2641	-36.925	156.479	-57.1089	-37.471	168.587	-63.877	-37.7421	181.043	-70.4735
15	-37.0665	135.078	-40.2609	-38.3965	146.177	-47.2821	-39.3943	157.547	-54.3508	-40.0538	169.264	-61.3785	-40.4091	181.376	-68.2593
16	-39.2441	137.154	-37.1886	-40.7074	147.81	-44.3593	-41.8324	158.741	-51.6168	-42.6036	170.042	-58.8752	-43.0457	181.779	-66.0207
17	-41.4194	139.382	-34.223	-43.0023	149.587	-41.5085	-44.2444	160.064	-48.9189	-45.1225	170.925	-56.3757	-45.6521	182.26	-63.762
18	-43.5982	141.754	-31.3736	-45.286	151.503	-38.7403	-46.6344	161.515	-46.2682	-47.613	171.919	-53.8889	-48.2284	182.825	-61.4881
19	-45.7853	144.261	-28.6495	-47.5636	153.554	-36.0653	-49.0064	163.094	-43.6751	-50.0776	173.025	-51.4244	-50.7754	183.479	-59.2053
20	-47.9843	146.894	-26.0566	-49.8392	155.733	-33.4921	-51.3643	164.8	-41.15	-52.5192	174.247	-48.9917	-53.2946	184.23	-56.921
21	-50.1984	149.643	-23.6002	-52.1164	158.033	-31.0279	-53.7116	166.629	-38.702	-54.9405	175.587	-46.6005	-55.7874	185.081	-54.6431
22	-52.4304	152.496	-21.2844	-54.3985	160.447	-28.6798	-56.0518	168.575	-36.3398	-57.3446	177.042	-44.2605	-58.2556	186.037	-52.3798
23	-54.6812	155.445	-19.1106	-56.6881	162.966	-26.4526	-58.3881	170.635	-34.0716	-59.7345	178.613	-41.9812	-60.7017	187.1	-50.1408
24	-56.9518	158.479	-17.0789	-58.9867	165.581	-24.3493	-60.7231	172.801	-31.9038	-62.1132	180.296	-39.772	-63.1282	188.275	-47.9358
25	-59.2428	161.588	-15.1892	-61.296	168.284	-22.3727	-63.0589	175.067	-29.8418	-64.4834	182.089	-37.641	-65.5377	189.56	-45.7747

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Point	0.00% (mm)			25.00% (mm)			50.00% (mm)			75.00% (mm)			100.00%(mm)		
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
26	-61.5543	164.762	-13.439	-63.6172	171.066	-20.5237	-65.3978	177.427	-27.8907	-66.8478	183.988	-35.5966	-67.9333	190.957	-43.6677
27	-63.8864	167.993	-11.8253	-65.951	173.918	-18.8021	-67.7414	179.871	-26.0535	-69.2091	185.986	-33.6459	-70.3181	192.463	-41.6251
28	-66.2392	171.272	-10.3447	-68.2982	176.832	-17.2074	-70.0911	182.393	-24.3328	-71.5693	188.078	-31.795	-72.6949	194.077	-39.6566
29	-68.6127	174.592	-8.99253	-70.6596	179.799	-15.7374	-72.4485	184.985	-22.7303	-73.9308	190.257	-30.0494	-75.0667	195.795	-37.7716
30	-71.007	177.944	-7.76387	-73.0358	182.813	-14.3896	-74.8148	187.638	-21.2461	-76.2955	192.517	-28.4136	-77.4363	197.612	-35.9789
31	-73.4225	181.322	-6.65353	-75.4275	185.864	-13.1609	-77.1911	190.345	-19.8798	-78.6652	194.849	-26.8905	-79.8063	199.522	-34.2861
32	-75.8599	184.719	-5.65569	-77.8356	188.946	-12.0473	-79.5787	193.098	-18.6305	-81.0417	197.245	-25.4826	-82.1792	201.517	-32.6998
33	-78.32	188.129	-4.76444	-80.2613	192.053	-11.0445	-81.979	195.889	-17.4955	-83.4264	199.698	-24.1908	-84.5571	203.591	-31.226
34	-80.8042	191.547	-3.97379	-82.7057	195.177	-10.148	-84.3933	198.711	-16.4724	-85.8212	202.198	-23.0149	-86.942	205.736	-29.8682
35	-83.3147	194.965	-3.27755	-85.1709	198.312	-9.35249	-86.8233	201.556	-15.5576	-88.2275	204.739	-21.9543	-89.3357	207.941	-28.6292
36	-85.8538	198.38	-2.6695	-87.6593	201.451	-8.65264	-89.2714	204.418	-14.7467	-90.6473	207.311	-21.0063	-91.7399	210.198	-27.5104
37	-88.4244	201.784	-2.14344	-90.1732	204.589	-8.04296	-91.7396	207.288	-14.0354	-93.0828	209.906	-20.168	-94.1564	212.498	-26.5112
38	-91.0302	205.172	-1.69318	-92.716	207.718	-7.5176	-94.2307	210.16	-13.4184	-95.536	212.517	-19.4356	-96.5871	214.831	-25.63
39	-93.675	208.539	-1.31253	-95.2909	210.834	-7.07061	-96.7476	213.028	-12.8901	-98.0093	215.134	-18.804	-99.0335	217.188	-24.8638
40	-96.3639	211.878	-0.99535	-97.9022	213.929	-6.69595	-99.2935	215.884	-12.4447	-100.505	217.752	-18.2681	-101.497	219.559	-24.2081
41	-99.1043	215.179	-0.73553	-100.556	216.995	-6.38728	-101.874	218.72	-12.0757	-103.027	220.361	-17.8215	-103.981	221.938	-23.6578
42	-101.903	218.432	-0.52698	-103.26	220.021	-6.13823	-104.494	221.527	-11.7765	-105.581	222.952	-17.4572	-106.488	224.312	-23.2057
43	-104.767	221.632	-0.36372	-106.018	223.001	-5.94242	-107.16	224.295	-11.5401	-108.171	225.516	-17.1679	-109.022	226.671	-22.8441
44	-107.698	224.774	-0.23994	-108.834	225.931	-5.79351	-109.874	227.022	-11.3597	-110.8	228.046	-16.9459	-111.587	229.009	-22.5649
45	-110.7	227.853	-0.14983	-111.71	228.807	-5.68514	-112.638	229.703	-11.2281	-113.469	230.54	-16.7834	-114.182	231.321	-22.359
46	-113.783	230.854	-0.08754	-114.655	231.617	-5.61054	-115.458	232.33	-11.1378	-116.181	232.993	-16.6719	-116.808	233.605	-22.2173
47	-116.968	233.741	-0.04709	-117.687	234.327	-5.56205	-118.351	234.874	-11.0792	-118.952	235.379	-16.5999	-119.477	235.841	-22.1263
48	-120.276	236.479	-0.02253	-120.828	236.905	-5.53194	-121.339	237.301	-11.0425	-121.801	237.666	-16.5549	-122.209	237.998	-22.0701
49	-123.708	239.062	-0.00868	-124.081	239.339	-5.51358	-124.427	239.597	-11.0191	-124.741	239.835	-16.5255	-125.018	240.051	-22.0333
50	-127.224	241.536	-0.00186	-127.413	241.672	-5.50282	-127.588	241.8	-11.004	-127.747	241.917	-16.5056	-127.887	242.023	-22.0077
51	-130.783	243.956	0.001447	-130.784	243.955	-5.49586	-130.785	243.955	-10.9932	-130.785	243.955	-16.4905	-130.786	243.954	-21.9878

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Table No. B Impeller Blade Co-ordinates (Suction Surface)															
point	0.00% (mm)			25.00% (mm)			50.00% (mm)			75.00% (mm)			100.00%(mm)		
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
1	-0.98096	121.507	-85.9037	-1.05146	136.221	-88.7745	-1.12195	150.935	-91.6453	-1.19244	165.649	-94.5162	-1.26294	180.363	-97.387
2	-4.41484	121.714	-83.31	-4.39234	136.345	-86.4448	-4.37631	150.979	-89.5679	-4.36864	165.615	-92.6793	-4.37125	180.253	-95.7793
3	-7.80588	121.94	-80.672	-7.7038	136.481	-84.0802	-7.61123	151.029	-87.464	-7.53248	165.583	-90.8231	-7.47193	180.142	-94.158
4	-11.1113	122.202	-77.9452	-10.9564	136.64	-81.646	-10.8073	151.092	-85.3073	-10.6716	165.557	-88.9284	-10.5574	180.031	-92.5095
5	-14.2882	122.52	-75.0852	-14.1208	136.835	-79.1071	-13.9451	151.176	-83.0715	-13.7737	165.538	-86.9759	-13.6199	179.92	-90.8202
6	-17.3006	122.912	-72.0567	-17.1703	137.078	-76.4331	-17.0062	151.285	-80.7319	-16.8267	165.53	-84.947	-16.6521	179.807	-89.0767
7	-20.1556	123.399	-68.8811	-20.1047	137.385	-73.6321	-19.9868	151.433	-78.2879	-19.8258	165.539	-82.8366	-19.6495	179.697	-87.2723
8	-22.8768	124.003	-65.6015	-22.937	137.775	-70.7322	-22.8931	151.634	-75.7561	-22.7731	165.578	-80.6525	-22.6119	179.597	-85.4093
9	-25.4875	124.747	-62.2611	-25.6804	138.267	-67.7618	-25.7315	151.904	-73.1531	-25.671	165.657	-78.4031	-25.5393	179.515	-83.4903
10	-28.0073	125.647	-58.8952	-28.347	138.879	-64.7472	-28.5084	152.258	-70.4955	-28.5216	165.788	-76.0967	-28.4319	179.459	-81.5179
11	-30.4462	126.711	-55.5221	-30.9434	139.62	-61.7036	-31.2274	152.706	-67.7947	-31.3267	165.981	-73.7403	-31.2894	179.438	-79.4947
12	-32.8132	127.947	-52.1577	-33.4743	140.5	-58.6435	-33.8904	153.259	-65.0592	-34.0863	166.245	-71.3386	-34.1112	179.459	-77.4226
13	-35.1181	129.359	-48.8185	-35.9447	141.526	-55.5792	-36.4995	153.924	-62.2972	-36.8005	166.589	-68.8963	-36.8965	179.528	-75.3031
14	-37.3738	130.948	-45.5238	-38.3622	142.703	-52.5258	-39.0572	154.711	-59.5182	-39.4697	167.021	-66.4181	-39.6443	179.654	-73.1378
15	-39.5949	132.71	-42.2937	-40.7364	144.032	-49.5006	-41.5692	155.623	-56.7355	-42.0953	167.549	-63.9115	-42.3541	179.843	-70.9292
16	-41.795	134.642	-39.148	-43.0773	145.515	-46.5213	-44.0414	156.666	-53.963	-44.6804	168.178	-61.3863	-45.0264	180.104	-68.6823
17	-43.9837	136.737	-36.1006	-45.3935	147.151	-43.6034	-46.4797	157.844	-51.2145	-47.228	168.917	-58.8524	-47.662	180.444	-66.403
18	-46.1677	138.987	-33.1628	-47.6913	148.935	-40.7591	-48.8895	159.156	-48.5024	-49.7409	169.769	-56.3198	-50.2617	180.87	-64.0969
19	-48.3538	141.384	-30.3454	-49.9767	150.863	-38.0002	-51.2754	160.604	-45.8385	-52.2227	170.74	-53.799	-52.8269	181.389	-61.7712
20	-50.5472	143.918	-27.6564	-52.2553	152.929	-35.3374	-53.6424	162.185	-43.2343	-54.6767	171.831	-51.3005	-55.3595	182.008	-59.4343
21	-52.7518	146.578	-25.1016	-54.5313	155.126	-32.7792	-55.9946	163.897	-40.7003	-57.1063	173.045	-48.8349	-57.8616	182.73	-57.0945
22	-54.9715	149.353	-22.687	-56.8089	157.446	-30.3334	-58.3363	165.735	-38.2462	-59.5152	174.381	-46.4126	-60.3356	183.563	-54.7608
23	-57.2085	152.233	-20.4152	-59.0918	159.881	-28.0069	-60.6713	167.695	-35.8814	-61.907	175.839	-44.0442	-62.7843	184.507	-52.4434
24	-59.4642	155.207	-18.287	-61.3821	162.42	-25.8035	-63.003	169.77	-33.6136	-64.2853	177.418	-41.7401	-65.211	185.567	-50.1527
25	-61.7398	158.263	-16.303	-63.6819	165.056	-23.7267	-65.3339	171.953	-31.4492	-66.6532	179.112	-39.5093	-67.6186	186.743	-47.8992

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	Item Code No. ES -11												Specification No. COECP_ ES11

point	0.00% (mm)			25.00% (mm)			50.00% (mm)			75.00% (mm)			100.00%(mm)		
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
26	-64.0357	161.393	-14.4616	-65.9929	167.779	-21.7787	-67.6667	174.237	-29.3941	-69.014	180.92	-37.3608	-70.0107	188.037	-45.6938
27	-66.3523	164.585	-12.7599	-68.3161	170.579	-19.9599	-70.0035	176.615	-27.4528	-71.3706	182.835	-35.3031	-72.3906	189.447	-43.5473
28	-68.6898	167.832	-11.195	-70.6527	173.448	-18.27	-72.3461	179.077	-25.628	-73.7255	184.852	-33.343	-74.7619	190.971	-41.4702
29	-71.0484	171.124	-9.7627	-73.0034	176.377	-16.7081	-74.6961	181.617	-23.9227	-76.0813	186.964	-31.4869	-77.1277	192.606	-39.4726
30	-73.4283	174.453	-8.45795	-75.3691	179.358	-15.2715	-77.0549	184.226	-22.3376	-78.4403	189.164	-29.7404	-79.4911	194.347	-37.5642
31	-75.8297	177.813	-7.27579	-77.7504	182.382	-13.9576	-79.4238	186.895	-20.873	-80.8043	191.444	-28.1071	-81.8551	196.189	-35.7537
32	-78.2532	181.195	-6.2105	-80.1483	185.442	-12.763	-81.8042	189.616	-19.5284	-83.1752	193.796	-26.5905	-84.2223	198.125	-34.0484
33	-80.6997	184.594	-5.25609	-82.5638	188.531	-11.6832	-84.1974	192.381	-18.3019	-85.5549	196.212	-25.1924	-86.5951	200.148	-32.4554
34	-83.1702	188.003	-4.40654	-84.9982	191.642	-10.714	-86.6047	195.183	-17.1911	-87.9449	198.683	-23.9132	-88.9757	202.249	-30.9797
35	-85.6667	191.416	-3.65561	-87.4531	194.767	-9.85023	-89.0278	198.013	-16.193	-90.3468	201.2	-22.7529	-91.3659	204.419	-29.6245
36	-88.1916	194.827	-2.99701	-89.9309	197.9	-9.08658	-91.4688	200.864	-15.3035	-92.7626	203.755	-21.7097	-93.7676	206.649	-28.3929
37	-90.7475	198.23	-2.42445	-92.434	201.035	-8.41757	-93.9299	203.728	-14.5183	-95.1943	206.339	-20.781	-96.1825	208.929	-27.2849
38	-93.3379	201.62	-1.93166	-94.9654	204.164	-7.83741	-96.4137	206.598	-13.8325	-97.644	208.943	-19.9635	-98.6126	211.249	-26.2999
39	-95.9666	204.991	-1.51236	-97.5285	207.282	-7.34009	-98.9231	209.466	-13.2405	-100.114	211.559	-19.2526	-101.059	213.599	-25.4358
40	-98.6382	208.336	-1.16029	-100.127	210.383	-6.91957	-101.461	212.327	-12.7366	-102.607	214.179	-18.6431	-103.525	215.97	-24.6885
41	-101.36	211.645	-0.86929	-102.767	213.456	-6.56954	-104.033	215.17	-12.3145	-105.126	216.795	-18.1292	-106.01	218.352	-24.0535
42	-104.139	214.91	-0.6332	-105.455	216.494	-6.2836	-106.643	217.987	-11.9675	-107.676	219.396	-17.7042	-108.519	220.735	-23.5244
43	-106.982	218.122	-0.44591	-108.199	219.486	-6.05534	-109.3	220.768	-11.6889	-110.262	221.972	-17.3608	-111.056	223.108	-23.0938
44	-109.894	221.275	-0.30145	-111	222.428	-5.87824	-112.005	223.508	-11.4716	-112.888	224.517	-17.0914	-113.624	225.461	-22.7538
45	-112.876	224.367	-0.19388	-113.862	225.316	-5.74578	-114.76	226.203	-11.3083	-115.555	227.026	-16.8879	-116.225	227.79	-22.4953
46	-115.939	227.385	-0.11727	-116.791	228.141	-5.65129	-117.571	228.846	-11.1916	-118.265	229.496	-16.7419	-118.857	230.092	-22.3087
47	-119.102	230.292	-0.0658	-119.807	230.872	-5.58758	-120.453	231.41	-11.1127	-121.031	231.903	-16.6433	-121.53	232.351	-22.1827
48	-122.389	233.051	-0.03364	-122.931	233.471	-5.54734	-123.429	233.86	-11.0627	-123.876	234.215	-16.5806	-124.264	234.534	-22.1028
49	-125.806	235.646	-0.01528	-126.173	235.919	-5.52365	-126.511	236.172	-11.0327	-126.815	236.403	-16.5429	-127.079	236.611	-22.0548
50	-129.315	238.124	-0.00602	-129.501	238.258	-5.51081	-129.672	238.383	-11.0158	-129.825	238.496	-16.5212	-129.959	238.598	-22.0272
51	-132.87	240.543	-0.00131	-132.871	240.543	-5.50341	-132.871	240.543	-11.0055	-132.872	240.542	-16.5076	-132.873	240.542	-22.0097

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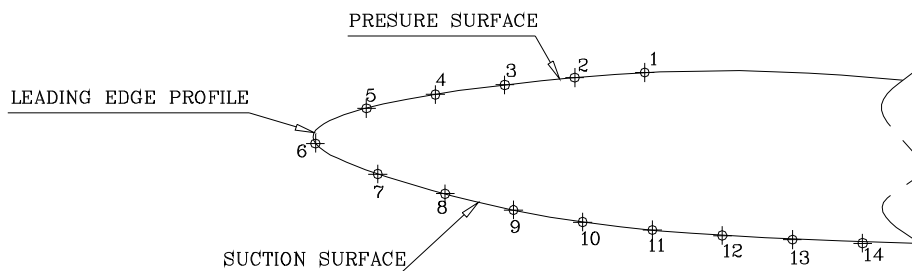
Dt. 3.4.2009

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Specification No.
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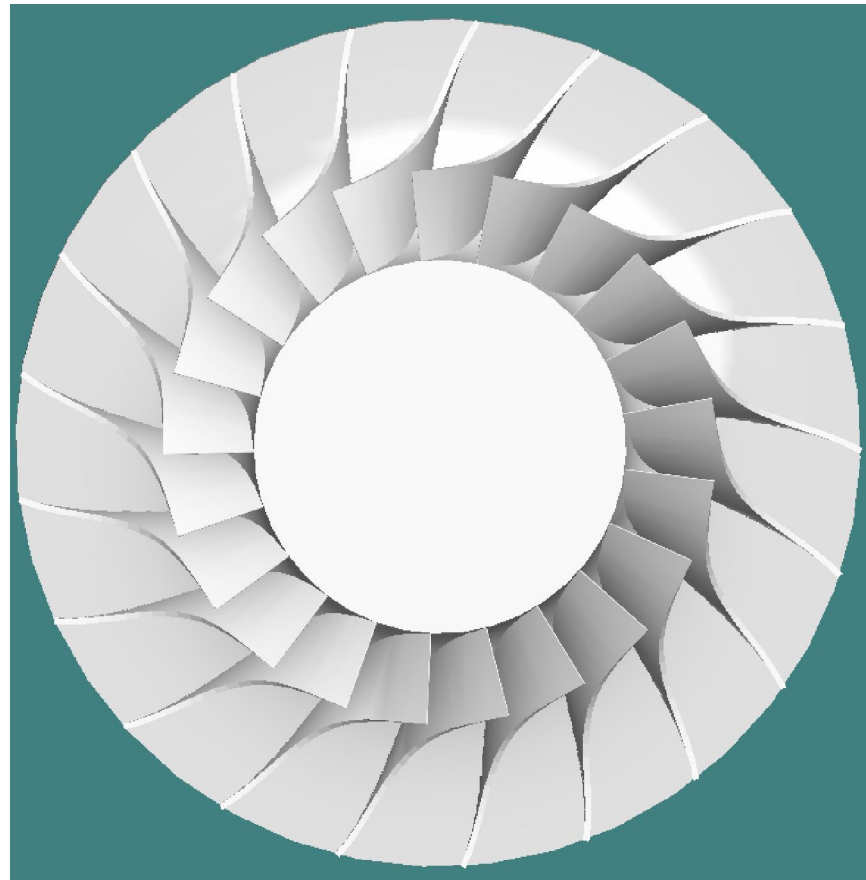
Table No. C Impeller Blade Co-ordinates (Leading Edge)

point	0.00% (mm)			25.00% (mm)			50.00% (mm)			75.00% (mm)			100.00%(mm)		
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
1	-0.34077	121.611	-85.0487	-0.43496	136.291	-87.8866	-0.52914	150.971	-90.7245	-0.62332	165.652	-93.5624	-0.7175	180.332	-96.4003
2	-0.26985	121.602	-85.1228	-0.36108	136.285	-87.959	-0.45229	150.968	-90.7953	-0.54347	165.651	-93.6315	-0.63463	180.334	-96.4678
3	-0.20933	121.592	-85.2037	-0.29753	136.278	-88.0388	-0.38568	150.964	-90.8738	-0.47379	165.65	-93.7089	-0.56186	180.337	-96.544
4	-0.16771	121.581	-85.2962	-0.25271	136.271	-88.1309	-0.33766	150.96	-90.9656	-0.42257	165.65	-93.8002	-0.50744	180.339	-96.6349
5	-0.1459	121.569	-85.3963	-0.22764	136.263	-88.2313	-0.30933	150.956	-91.0663	-0.39099	165.649	-93.9012	-0.47263	180.343	-96.7361
6	-0.14313	121.557	-85.4983	-0.22171	136.254	-88.3342	-0.30023	150.952	-91.1701	-0.37871	165.649	-94.0058	-0.45716	180.346	-96.8415
7	-0.1595	121.546	-85.5985	-0.23506	136.247	-88.436	-0.31056	150.948	-91.2733	-0.38599	165.649	-94.1105	-0.46137	180.35	-96.9476
8	-0.19492	121.535	-85.694	-0.26768	136.239	-88.5335	-0.34033	150.944	-91.3729	-0.4129	165.649	-94.2121	-0.48538	180.353	-97.0511
9	-0.24799	121.525	-85.7812	-0.31822	136.233	-88.6233	-0.38831	150.941	-91.4652	-0.45827	165.649	-94.307	-0.52812	180.357	-97.1486
10	-0.31676	121.516	-85.8568	-0.38484	136.227	-88.702	-0.45273	150.938	-91.547	-0.52046	165.649	-94.3919	-0.58805	180.36	-97.2366
11	-0.39857	121.509	-85.918	-0.46497	136.222	-88.7667	-0.53116	150.936	-91.6153	-0.59717	165.649	-94.4637	-0.66302	180.363	-97.3119
12	-0.49052	121.503	-85.9624	-0.55584	136.219	-88.8149	-0.62094	150.934	-91.6674	-0.68586	165.649	-94.5197	-0.75062	180.365	-97.3719
13	-0.58962	121.5	-85.9891	-0.65451	136.216	-88.8457	-0.71922	150.933	-91.7022	-0.78376	165.65	-94.5586	-0.84814	180.366	-97.4149
14	-0.6924	121.498	-85.9971	-0.75761	136.215	-88.8578	-0.82267	150.933	-91.7184	-0.8876	165.65	-94.5789	-0.9524	180.367	-97.4394
15	-0.79361	121.499	-85.9841	-0.85993	136.216	-88.8486	-0.92615	150.933	-91.713	-0.99229	165.649	-94.5775	-1.05834	180.366	-97.4419
16	-0.88911	121.502	-85.9498	-0.9573	136.218	-88.8176	-1.02545	150.934	-91.6854	-1.09357	165.649	-94.5532	-1.16163	180.365	-97.421
17	-0.98096	121.507	-85.9037	-1.05146	136.221	-88.7745	-1.12195	150.935	-91.6453	-1.19244	165.649	-94.5162	-1.26294	180.363	-97.387



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AUTHORISATION LETTER FOR E-PAYMENT/ NEFT / RTGS

(PLEASE FILL UP THE FORM COMPLETELY IN CAPITAL LETTERS ONLY)

1	Type of Request (Tick One)	NEW / CHANGE
2	BHEL Vendor Code	
3	Company's Name	
4	Address	
5	City with Pin Code	
6	State	
7	PAN NUMBER	
8	Name of Contact Person	
9	Phone No with STD Code	
10	Fax No with STD Code	
11	Email Id	
12	Web Site (URL)	

BANK DETAILS FOR EFT / RTGS

1	Bank Name	
2	Branch	
3	Branch Code	
4	Address	
5	PHONE No.	
6	Account No.	
7	MICR/ IFSC Code	
8	Bank Swift Code	
8	NEFT/ RTGS enabled	Yes / No
10	Cancelled Cheque	Enclosed / Not Enclosed

1. I, as representative / owner of the above named company, hereby authorise BHEL R&D Hyderabad, to electronically make payments to the designated bank account. I hereby certify that the particulars given above are true, complete and correct.
2. If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information, I would not hold BHEL / transferring Bank responsible.
3. This authority remains in full force until BHEL receives and acknowledge written notification requesting a change or cancellation.

Date:

Authorised Signatory
Designation :

COMPANY SEAL



BHARAT HEAVY ELECTRICALS LIMITED
CORPORATE R&D DIVISION, VIKAS NAGAR, HYDERABAD – 500 093, AP, India
Ph: 0091-40 – 23778474, FAX: 0091-40 – 23770698

RD:MPX:F-20

General Terms and Conditions of Enquiry & Contract for the Purchase of Goods/ Services

1. The quotation and any order resulting from this enquiry shall be governed by these General Terms and Conditions of enquiry and contract for the supply of goods and the supplier quoting against this enquiry shall, unless specifically stipulates any different terms or conditions, be deemed to have read and agreed to the same.
2. Sealed quotations in double cover with tenderer's distinctive seal, superscribing enquiry number, date and due date are to be submitted so as to reach on or before due date & time, addressed to **Additional General Manager(MM) and Head, Bharat Heavy Electricals Limited, Corporate Research & Development Division, Vikasnagar, Hyderabad, Andhra Pradesh, India – PIN-500 093, India.**
In the case of **Two-part bid**, each inner cover shall clearly be labeled as a) **Technical & Commercial Bid** containing technical data/ drawings/ catalogues/ quality plans along with commercial terms and conditions & copy of the price bid with the price columns left blank (unpriced price bid), b) **Price bid** containing prices quotes. Installation and/or Commissioning charges shall be spelt out in absolutely lucid terms, taking into account total charges, rather than quoting vaguely, such as charges per man-day or charges per engineer per day etc. **If the price bid was found later to be different from the unpriced price bid in any way, the offer will be rejected summarily.**
3. **Tender/ Technical bid Opening:** Unless specified otherwise, tenders/ technical bids will be opened on appointed date and time as mentioned in the enquiry or as communicated changed date/time, if any, in the presence of such of those tenderers who may be present.
4. **Delayed/ Late Tender:** Tenders, which have been posted by registered post through the postal department in time before opening date but received after tender opening, shall be treated as regular tenders. Other tenders received after tender opening time shall be treated as late tenders and normally they may be rejected.
5. The Quotation should be free from overwriting and erasures. Corrections and additions, if any, must be attested. Supplier should indicate in the quotation dimensions (Size), weight, rate etc., in the metric system unless the enquiry calls for different unit.
6. **Validity of Quotation:** All quotations shall be kept open for acceptance for a period of ninety days from the date of opening of Tenders/ Technical bid and this shall be deemed to be an express condition of all quotations. The rate shall be quoted in both figures and in words.
7. In the case of Two-part bid, the vendor should furnish technical clarifications, if any, within stipulated time mentioned, failing which, it will be construed that the vendor is not interested in the tender and BHEL shall not consider the offer for further evaluation.
8. **Revision of Pricebid:** In the event of any bidder, after finalizing the technical specifications and scope of supply, opting to revise and submit their latest price bid, then BHEL reserves the right to open their original / previous price bid also while evaluating revised bid.
9. **Pricebid Opening:** Unless specified otherwise in the enquiry, the Price bids of technically qualified vendors shall be opened with prior intimation in the presence of such of those tenderers who may be present.
10. **Conformity to Specifications:** The material should be of the best quality and shall be conforming to our specification given in our enquiry. Unless otherwise agreed upon by BHEL, no payment shall be due by BHEL in respect of any sample. Offers without details of specifications/ applicable catalogues will not be considered and are liable to be rejected.
11. **Terms of Delivery:** All suppliers shall quote the lowest prices on ex-works and FOB/FCA basis. Foreign suppliers will also indicate their Indian agent's name and address with percentage of agency commission out of the quoted price, if any. Name and Address of the supplier's Bankers address should also be given. Indian suppliers for the indigenously manufactured/ imported stock shall quote on Ex-works /Free-on-Rail/Road /FOR-destination basis, indicating packing & forwarding charges, if any, separately.
12. **Taxes and Duties:** Unless specified otherwise in the enquiry, BHEL do not provide "C" or "D" Form as it is engaged in R&D. All Indian suppliers shall clearly mention current Sales Tax/ VAT, Excise Duty, and Service Tax etc, if any, payable in addition to the quoted price and indicate applicable rates/ percentage, item-wise clearly. It will be paid only if Registration Number under State(TIN)/ Central Sales Tax or Service Tax is specifically mentioned in the Bill/Invoice. Vendors without a Sales Tax/VAT registration and applicable Service Tax registration will not be considered.
13. **Insurance:** Insurance will be arranged by BHEL in case of Ex-Works as well as FOB basis supplies.
14. **Terms of Payment:** Full payment will be made within 30 days after receipt, inspection and acceptance of the material (and where involved, Erection and commissioning of the material/ equipment at BHEL/Destination) though Electronic Fund transfer (RTGS/NEFT/SEFT) with bank charges to the supplier's account. For foreign suppliers, the preferred payment term will be on Sight Draft basis and bank charges inside India will be to BHEL account and outside India will be to supplier's account.
15. Suppliers shall quote competitive price and best delivery for all the items mentioned in the enquiry. BHEL reserves the right to reject partial quotations and to place order on overall landed cost basis. Correct date of effecting supplies in the event of an order should be indicated in the offer. If the supplier's quoted terms are different from BHEL standard payment terms (Refer #14 above), interest @11% per annum (or as indicated in the enquiry) will be loaded to the quoted prices for difference of payment period.
16. **Packing:** The supplier shall be responsible for the goods being properly and adequately packed so as to prevent any loss, damage or deterioration during transit and indicate packing charges, if any, separately.
17. **Part/ Split Ordering:** BHEL reserves right to Order part of the item/ quantity of the enquiry and split the order among qualified vendors.
18. In case the goods enquired are on Rate Contract basis with any other unit of BHEL, such fact should be clearly indicated in the quotation giving full particulars of Rate Contract number, validity and price and also your willingness to comply with order if placed against such Rate Contract. A true copy of Rate contract signed by the supplier should be sent with the quotation.
19. **Inspection:** On receipt, the goods shall be subjected to inspection and also test, if necessary, and our decision regarding the acceptability of the goods shall be final and binding on the suppliers.
20. **Penalty for late delivery:** The time stipulated for delivery of goods shall be deemed to be the essence of the contract and delivery must be completed within the stipulated date/s. In the event of supplier's failure to supply the goods by the stipulated date/s, a penalty of ½% per week for the delayed no of weeks or part thereof for the undelivered portion of PO subject to a maximum of 10% of total order value shall be levied at the discretion of BHEL.
21. **Withdrawal from the Contract:** In case the supplier withdraws the quotation after its acceptance by BHEL or fails to supply the goods as per the terms and conditions of contract, or at any time repudiated the contract wholly or in part, BHEL shall be at liberty to cancel the Purchase Order and to recover from the supplier the extra cost and other loss, incidentals due to the breach of contract on the part of the supplier through risk purchase.
22. **Guarantee/ Warranty certificate and Manufacturer's Test report:** Invariably in all cases where it is so stipulated, the supplier should furnish Guarantee/ Warranty certificate valid for a period of 18 months from date of supply or 1 year from the date of receipt, acceptance and commissioning(or more, if provide by oem) whichever earlier and manufacturer's Test report along with the goods, failing which, BHEL shall have the right to reject the goods.
23. All ferrous/ non-ferrous items shall be colour coded as per bureau of Indian standards/ or IS standards/ BHEL Standards.
24. **Recovery of Dues:** BHEL shall recover any amount due from the supplier or any amount outstanding to the credit of the supplier with BHEL R&D unit or any other BHEL unit(s) and/or by legal action.
25. **Arbitration & Forum for Legal Proceedings:** All disputes arising in connection with indigenously/ foreign supplies shall be settled through arbitration held at Hyderabad, AP, India and arbitration shall be appointed by Arbitration Tribunal of the Federation of Andhra Pradesh Chambers of Commerce and Industry, Hyderabad, AP, India. The Courts at Secunderabad/ Hyderabad, AP, India shall have jurisdiction in respect of any suit or other legal proceeding arising from or relating to this contract

The rights and remedies of BHEL stated in these General terms and conditions shall be in addition and supplemental to its rights and remedies under law and custom or usage of trade or business and shall in no way be deemed to limit, curtail, supercede or derogate from its said rights and remedies.



RD:MPX:F-18

BHARAT HEAVY ELECTRICALS LIMITED
CORPORATE R&D Division
Vikasnagar, Hyderabad, Andhra Pradesh, India – 500093.,

IMPORTED

Suppliers' compliance statement to basic conditions of enquiry (to be submitted along with Technical & Commercial bid)
Enquiry number: **Enquiry dt:**

(In case Order to be placed on the Principal and foreign currency)

Condition	BHEL R & D's terms	Supplier's compliance (indicate Yes/No. if 'No', state terms desired)
1. Validity of offer	90 days from the tender opening date (or as per enquiry)	
2. Delivery requirements	FCA – Nearest International Airport (or as indicated in the enquiry)	
3. Warranty	Unless specifically mentioned in the enquiry, all supplied items to be provided with warrantee for one year (or more, if provided by the OEM) from the date of acceptance/ commissioning. In case of equipment involving erection and commissioning, warrantee shall be for 18 months from the date of dispatch or 12 months from the date of commissioning, whichever is earlier	
4. Terms of payment	Sight draft. All bank charges inside India will be to BHEL R&D account and outside India will be to the supplier's account. Documents through State Bank of India, Trade Finance Central processing Cell (TFCPC), Opp. Anand Theatre, Secunderabad, Andhra Pradesh, India-500003. SWIFT Code: SBININBB602, Phone: 91-40-27816795, FAX: 91-40-27720459	
5. Agency commission	Pl specify Indian agency commission charges, if any, in percentage of quotation. The same shall be paid to the agency in Indian Currency only.	
6. Erection/ Commission	As per enquiry	
7. Documentation	As per enquiry	
8. Insurance	BHEL will arrange Insurance based on intimation to our Insurance agency. Address of the agency will be mentioned in the Purchase Order.	
9. Penalty for late delivery	0.5% per week beyond the delivery date on undelivered portion subject to a maximum of 10% of the total order value.	

* BHEL R&D reserves the right to reject any offer due to non-compliance with the above conditions and/or non-receipt of this form in duly filled condition

* Any other elements of cost in addition to the above may please be specified in detail

(Signature and Stamp/ Seal of Vendor)



RD:MPX:F-17

BHARAT HEAVY ELECTRICALS LIMITED
CORPORATE R&D Division
Vikasnagar, Hyderabad – 500093, India.

Suppliers' compliance statement to basic conditions of enquiry (to be submitted along with Technical & Commercial bid)

Enquiry number::

Enquiry date::

(In case Order to be placed on Indian supplier in Indian currency)

Condition	BHEL R& D's terms	Supplier's compliance (indicate Yes/No. if 'No', state terms desired)
1) Validity of offer	Unless specifically mentioned in the enquiry, 90 days from the tender opening date	
2) Delivery requirements	Free delivery at our stores or FOR destination (or as indicated in the enquiry)	
3) Warranty	Unless specifically mentioned in the enquiry, all supplied items to be provided with warrantee for one year (or more, if provided by the OEM) from the date of acceptance/commissioning. In case of equipment involving erection and commissioning, warrantee shall be for 18 months from the date of despatch or 12 months from the date of commissioning, whichever is earlier	
4) Terms of payment	Unless specifically mentioned, full payment will be made within thirty days after receipt, inspection and acceptance of the material at BHEL R&D (and where involved, erection and commissioning of the material/equipment at BHEL/destination), by EFT/RTGS with bank charges, if any, to supplier's account.	
5) Taxes & Duties	Unless specifically mentioned in the enquiry, we do not provide 'C' or 'D' form. Supplier to specify rates of taxes and duties element wise and related percentages. Terms like "inclusive" or "extra" are not acceptable. Please mention "NIL" if taxes/ duties are exempted/ not applicable.	
6) Penalty for late delivery	0.5% per week beyond the delivery date on undelivered portion subject to a maximum of 10% of the total order value	

* BHEL R&D reserves the right to reject any offer due to non-compliance with the above conditions and/or non-receipt of this form in duly filled condition

* Any other elements of cost in addition to the above may please be specified in detail

(Signature and Stamp/Seal of Vendor)



RD:DP:MPX:F-14

BHARAT HEAVY ELECTRICALS LTD.
Corp. R&D DIVISION
VIKAS NAGAR,
HYDERABAD- 500 093 (INDIA)

SUPPLIER REGISTRATION FORM

(FOREIGN SUPPLIER)

ALL COLUMNS SHOULD BE PROPERLY FILLED IN THE SPACE PROVIDED FOR.
WHEREVER IT IS NOT APPLICABLE PLEASE WRITE "NOT APPLICABLE".
INCOMPLETE OR INCORRECT FORMS MAY NOT BE CONSIDERED.

1.0 GENERAL INFORMATION:

1.1NAME OF COMPANY

1.2DETAILS OF HEAD OFFICE:

ADDRESS :
TELEPHONE :
FAX :
.EMAIL :
.WEB SITE :

1.3DETAILS OF FACTORY/WORKS:

ADDRESS :
TELEPHONE :
FAX :
.EMAIL :
.WEB SITE :

1.4DETAILS OF MARKETING AGENT

ADDRESS :
TELEPHONE :
.FAX :
.EMAIL :
.WEB SITE :

1.5 CHIEF EXECUTIVE

1.6 CONTACT PERSON(S)
FOR PRODUCT OFFERED
NAME(S)
OFFICIAL CPACITY
ADDRESS:
TELEPHONE
FAX
E-MAIL

1.7 YEAR OF ESTABLISHMENT

1.8 PRODUCTION CAPACITY PER ANNUM

1.9 PARTICULARS OF PRODUCT INCLUDING
SPECIFICATION AND RANGE OFFERED
FOR REGISTRTION
(ATTACH BROUCHERS AND CATALOGUE)

1.10 NAME(S) OF BANKERS

1.11 BANKER'S CERTIFICATE

1.12 PORT OF LOADING

1.13 NEAREST AIRPORT

1.14 NAME OF THE INDIAN AGENT, IF ANY
WITH AUTHORISATION LETTER

2.0 FINANCIAL INFORMATION

2.1 ...TOTAL CAPACITY

2.2 ...ANNUAL TURN OVER FOR LAST 3 YEARS

2.3 ...WHEHER CREDIT LICENSE ACCEPTABLE YES/NO

3.0 QUALITY MANAGEMENT SYSTEMS
ENCLOSED FORMAT PART-B

3.1 EXPERIENCE LIST FOR SAME/SIMILAR ITEMS
TO BE ENCLOSED

4.0FUTURE EXPANSION PLANS:
(GIVE DETAILS)

5.0 LIST OF ENCLOSURES:
INCLUDING BROUCHERS, CATALOGUES, TECHNICAL
LITERATURE ETC.

6.0 ANY OTHER INFORMATION

SIGNATURE OF SUPPLIER (AUTHORIZED SIGNATORY)

NAME

DESIGNATION

DATE

.....OFFICIAL SEAL

Note: Please attach separate sheets, if space found is inadequate



BHARAT HEAVY ELECTRICALS LTD.

Corp. R&D DIVISION

VIKAS NAGAR,

HYDERABAD- 500 093 (INDIA)

Ph: 040 – 23778474, Fax: 040 – 23770698, email: mpx@bhelrnd.co.in

RD:DP:MPX:F-13

VENDOR REGISTRATION FORM

(Indigenous supplier)

[FORM TO BE SUBMITTED* BY THE BIDDER ALONG WITH TECHNICAL-BID]

Before filling, please refer to instructions on page-4

1.0 VENDOR PROFILE:

1.1 Name and address of the vendor:

Phone Nos.:

Fax No.:

Email: 1.

2.

1.2 Local representative name & address in Hyderabad/ Secunderabad:

Phone Nos.:

Fax No.:

Email:

Contact person:

Mobile No.:

2.0. TYPE OF ORGANIZATION:

PROPRIETORSHIP	COMPANY	SISTER CONCERN (mention vendor registration number of main organization)	
PARTNERSHIP	CORPORATION	Small Scale Industry	ANY OTHER (Please specify)

In case of SSI unit, copy of registration to be enclosed.

3.0 ANNUAL TURN OVER:

#	Year	Turn-Over
1	Current Year(budgeted)	
2	Previous year (200 - 0)	
3	Prior Year (200 - 0)	

4.0 NAME AND ADDRESS OF THE BANKER:

1. Bank Name
2. Branch name
3. Account number
4. Account Type
5. MICR Code:
6. IFSC Code(RTGS/NEFT):
7. Bank Phone number(s),

Blank cheque, duly cancelled, to be enclosed.

Please note that all payments shall be made through Electronic clearance services to your above account against the orders executed, if any.

5.0 REGISTRATION PARTICULARS (relevant copies to be enclosed)

- 5.1 IT Permanent Account No.(PAN):
- 5.2 State sales tax/VAT Registration No.:
- 5.3 Central Sales Tax Registration No.
- 5.4 ED Registration No.
- 5.5 Service Tax Registration No.:
- 5.6 PF Account No.:
- 5.7 Labour Licence No.:
- 5.8 ESI Account No.:

6.0 CONTACT PERSON: S/Sri

Designation:::

Phone/ Mobile No. :

7.0 TOTAL NUMBER OF EMPLOYEES:

Graduates (Engr./Scientists/ Mgmt/Fin.)	Consultants	Workers		
		Sup./Skilled	Semiskilled	Unskilled

8.0 WISH TO REGISTER FOR SUPPLIES/SERVICES:

#	Service/Supplies	Capacity
1		
2		
3		
4		
5		
6		
7		

9.0 REFERENCE LIST :

(Only recognized public and private sector companies, attach if printed copy available)

#	Customer	Volume / Year
1		
2		
3		
4		
5		
6		
7		

10.0 INFRASTRUCTURE / FACILITIES:

#	Facility (with specifications)	Age/ Year procured
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

11.0 REGISTRATION WITH OTHER BHEL UNIT/UNITS:

#	Unit	Registration No.	Year
1			
2			
3			
4			

12.0 ANY OTHER INFORMATION :

DECLARATION:

The information furnished above is true and authentic.

(CEO / PROPRIETOR)

SEAL:

DATE:

The competent authority reserves the right to accept or reject the registration. Registered vendors will be informed by mail / email, as convenient. Contact AGM (MM) for clarification/ additional information on registration.

A separate communication will be sent to you in case of non-registration, citing reasons thereof.

Instructions

1. Answer all items; use NA for items not applicable.
2. BHEL units do not require this registration.
3. Use additional sheets for want of space if required.
4. Attach copies of latest documents in respect of items 5.0 (Registration no.s)
5. Photographs of registered office and the chief executive/proprietor shall be furnished.
6. Use A4 sheets for this document and the enclosures.

* REGISTERED BIDDERS, HAVING BHEL (R&D) REGISTRATION NO. OR HAVE SUBMITTED THIS FORMAT FOR REGISTRATION, NEED NOT FURNISH THIS INFORMATION AGAIN