



# **BHARAT HEAVY ELECTRICALS LIMITED**

## **HEEP, HARIDWAR**

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### EXPRESSION OF INTEREST FOR EMPANELMENT OF ENGINEERING SOFTWARE DEVELOPERS

#### **CAD/CAM/CAE/PDM/KBE APPLICATIONS**

BHARAT HEAVY ELECTRICALS LTD is the largest engineering and manufacturing enterprise in India in energy related infrastructure sector today. BHEL was established 50 years ago when its first plant was set up in Bhopal. BHEL has 14 manufacturing divisions, 4 power sector regional centers, 8 service centers, 18 regional offices and a large number of Project Sites spread over India and abroad. Its product span areas like Power Generation, Transmission & Distribution, Transportation, Oil & Gas and Renewable Energy sectors. Leading the power equipment manufacturing sector in the country, BHEL achieved a sales Turnover of Rs.18702 Cr in 2006-07.

The company has planned to undertake a major initiative in automating its Design & Engineering functions and also changeover from 2-D to 3-D platform and integrate its design & drawing practices from Concept to Manufacturing.

There are nearly 160 products identified for design automation projects. These projects will be taken up in a phased manner by the respective units in a period of 3 to 5 years.

In order to achieve this objective BHEL plans to empanel software development vendors engaged in the areas of Engineering services and development of software subject to their fulfilling requirements as given below:

#### **1. NATURE OF ORGANISATION**

The Vendor should either be a fully operational Engineering Services Organisation or Engineering Services Division of a Software Organisation or an Engineering Services Division of a Manufacturing Organisation using CAD/CAM/CAE and CAD data management tools, fully devoted to such services outside their own organization or OEMs/Principals (or their wholly owned subsidiaries in India).

#### **2. EXPERIENCE**

Vendors must be in existence for engineering software services at least for 4 years as a separate entity or as a part of a larger organization. The vendor should have at least 3 years experience in the areas of CAD/CAM/CAE/PDM/KBE using platforms Unigraphics, Pro-E, Inventor, Ansys, Nastran, Abacus, PDMS, CFX, Fluent etc.

#### **3. REGISTERED OFFICE**

Vendor must be a Company registered in India and should have its India operations carried out from India at least for 1 year.

#### **4. TECHNICAL SUPPORT**

Vendor must have latest authorized software along with AMC for user licenses & development licenses required for successful completion of the project as per terms & conditions agreed at the time of order against specific tender(s).

The vendor should have proper contract with the OEMs/Principals for providing Technical Support, Training and resolution of Technical problems and issues expected to arise during Software development.

#### **5. EMPANELMENT CATEGORIZATION**

Vendors shall be categorized based on the vendor response as per Annexure-I. The vendors shall be categorized depending on their Organizational & financial soundness, Technical competency, experience, business turnover, etc. after the receipt of information from the vendors.



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However, during the validity of this empanelment this categorization may be changed by BHEL depending upon performance of a vendor. Vendors, who qualify for higher category will also qualify for the lower category.

### **6. VALIDITY OF EMPANELMENT**

This empanelment is for a period of 1 year and may be extended by BHEL at its sole discretion. BHEL also reserves the right to add/delete the vendors from the list or cancel the process of empanelment before or during the validity period without assigning any reason whatsoever.

### **7. TERMINATION OF VENDOR FROM PANEL**

In case of unsatisfactory performance (non conformance to quality, delivery time, response, documentation, training, etc.) by a Vendor, BHEL reserves the right to remove the vendor from panel.

### **8. PLACE OF WORK**

All projects will have to be taken up only at the respective BHEL units/centers (ON SITE) and no offsite work is envisaged. Major units/centers are located at Bhopal (Madhya Pradesh), Jhansi (Uttar Pradesh), Tiruchirappalli (Tamilnadu), Ranipet (Tamilnadu), Haridwar (Uttarakhand), RC Puram, Hyderabad & Corp. R&D, Hyderabad (Andhra Pradesh), ARP (New Delhi), PEM (Noida) and Bangalore (Karnataka). Other units/centers are located throughout India.

### **9. SKILL SET & COMPETENCY REQUIREMENTS**

The projects may require skills in any or all of the areas mentioned below. The vendors should provide information regarding their competence in the below listed and other related areas (if any) along with experience in ANNEXURE-I:

- A) 3D Solid Modeling
- B) Rule based design & programming capability for 3D Modeling, 2D Drawing generation, BOM Generation, Engg. reports etc.
- C) Capability to develop interface with software applications (Graphical User Interface, Legacy software/programs etc.)
- D) Project Management
- E) Product Data Management Customization and Implementation
- F) 2D/3D Finite Element Modeling, Simulation and Analysis (Linear, Non-Linear etc.)
- G) RDBMS Database connectivity (Oracle/ SQL Server etc.)
- H) Open API tools – VB, C++, Java, J2EE etc.
- I) Computer Aided Manufacturing
- J) ERP (SAP) Integration

As each project involves different technical expertise to implement a BHEL project, a team of adequate size of engineers is essential.

Typical team structure of a BHEL project:

- a. Project Manager
- b. Project lead – Technical
- c. Designers/Engineers to collect design rules
- d. Designers for modeling, drafting and analysis
- e. Designers for Rule based Design & programming
- f. VB or C++ or Java programmers
- g. Product Data management experts
- h. Database experts
- i. Multimedia Experts

The above requirements are typical for a project and may change during the course of project implementation at BHEL depending on project requirement and vendor should be ready to meet such requirements.



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#### COMPETENCY

- A) Personnel deputed for BHEL assignment should have a minimum of 2 years experience in CAD/CAM/CAE/PDM/KBE and should have attended training in relevant areas/modules of the software (current version).
- B) The Project Manager deputed for the project should have a minimum of 2 Projects experience as Project Manager in similar domain. Project manager need to have at least 4 years of experience in the industry in similar domain.
- C) The Technical Lead deputed for project should have executed at least 1 project as Technical lead in similar domain and at least 3 years of experience in industry in similar domain.

The vendor shall provide supporting documentary proof for the experience and training details of its personnel at the time of project execution.

#### **10. POST EMPANELMENT**

Upon completion of due process of empanelment, the concerned BHEL unit will call for Tenders from empanelled vendors. Various manufacturing units shall do this activity depending on their requirements.

#### **11. HARDWARE**

Vendor shall make available necessary hardware like PCs, Workstations etc for on-site development of software. After completion of the project they will take the hardware back.

In specific cases where hardware is available with BHEL unit, same hardware can be made available by BHEL to execute the project.

#### **12. OWNERSHIP**

BHEL shall have total ownership on the Intellectual property generated during the project execution using the proprietary material or information of BHEL. To use this know how for any purpose including presentations etc., the vendor shall take prior permission from BHEL; which may or may not be granted depending on the specific case(s).

#### **13. AGREEMENT OF CONFIDENTIALITY**

It is recognized that in course of performing the services, vendor may have access to confidential information and trade secrets belonging to BHEL. It is therefore desired that such confidential information and trade secrets are protected. A suitable "agreement of confidentiality" will be executed with the vendor before execution of the project by the concerned BHEL unit. All Vendor's project team members will execute Non-Disclosure Agreements as required by BHEL.

#### **14. EMPANELMENT PROCEDURE**

All interested Vendors who fulfill above requirements can apply for empanelment as per format given in Annexure-I. Duly-signed documentary evidence (wherever asked for) shall be furnished by the vendor. Incomplete applications and applications not supported by documents shall be summarily rejected. The decision of Empanelment Committee at BHEL, Haridwar shall be final and binding. Applications complete in all respect must reach the following address on or before **31<sup>st</sup> July, 2007**.

**DGM, (Engg)**  
**GM (Engg.) Secretariat**  
**Engineering Building, HEEP**  
**BHEL, HARIDWAR- 249403**  
**UTTARAKHAND, INDIA**  
**Email: [rkohli@bhelhwr.co.in](mailto:rkohli@bhelhwr.co.in)**  
**Tel No: 01334-285256, 285493, FAX: 01334-223954**

**BHARAT HEAVY ELECTRICALS LIMITED**  
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## ORGANISATIONAL INFORMATION

## 2.0 OWNERSHIP INFORMATION :

### DOCUMENTS TO BE FURNISHED

- |     |   |   |
|-----|---|---|
| 2.1 | GOVT. OF INDIA UNDERTAKING:<br>OR<br>STATE GOVT. UNDERTAKING :                          |   |
|     | OR<br>LIMITED COMPANY, :  | MEMORANDUM AND<br>ARTICLES OF ASSOCIATION   |
|     | OR<br>PRIVATE COMPANY :   | MEMORANDUM AND<br>ARTICLES OF ASSOCIATION   |
|     | OR<br>CO-OPERATIVE SOCIETY, :   | SOCIETY RULES AND<br>BYE LAWS               |
|     | OR<br>PARTNERSHIP FIRM, :   | PARTNERSHIP DEED                            |
|     | OR<br>PROPRIETORSHIP, :   | PROFESSION TAX REGN.<br>AND MUNICIPAL REGN. |
|     | ANY OTHER (SPECIFY) :   |   |
| 2.2 | NATURE OF BUSINESS :  |   |
|     | ( APPLICATION DEVELOPER/<br>S/W SUPPLIER/ SOLN. PROVIDER/<br>BPO/ TRAINING CENTER etc.) |   |
| 2.3 | YEAR OF ESTABLISHMENT :   |   |

**VENDOR'S AUTHORISED SIGNATORY**



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<b>ORGANISATIONAL INFORMATION FOR THE PREVIOUS THREE YEARS</b>				
3.0	<b>FINANCIAL INFORMATION</b>	Year 1	Year 2	Year 3
		(Years in ascending order, Money value in Rs. Lakhs )		
3.1	NET WORTH (Share Capital +Reserves)			
	Growth over previous year (%)	-----		
3.2	LONG TERM DEBT / LOAN			
3.3	DEBT EQUITY RATIO <div style="display: flex; justify-content: space-between; font-size: small;"> <span><u>Long term Debt</u> (3.2)</span> <span><u>Net worth</u> (3.1)</span> </div>			
3.4	INVESTMENT IN: Land & Building			
	Hardware/Software/Equipments etc.			
	Other Fixed Assets			
3.5	NET CURRENT ASSETS			
	1      a) Cash on hand			
	b) Account receivable			
	c) Inventories			
	<b>Total</b>			
	CURRENT LIABILITY			
	a) Sundry creditors			
	b) Interest accrued but not due			
	2      c) Credit balance in sundry debtors			
	d) Other liabilities			
3 <b>Total</b>				
3.6	CURRENT RATIO			
	<div style="display: flex; justify-content: space-between; font-size: small;"> <span><u>Current assets</u> {3.5 (1)}</span> <span><u>Current liability</u> {3.5 (2)}</span> </div>			
3.6	SALES			
	Growth over previous year (%)	-----		
3.7	PROFIT BEFORE TAX			
	Growth over previous year (%)	-----		
3.8	PROFIT AFTER TAX			
	Growth over previous year (%)	-----		
3.9	Whether the vendor has been referred to BIFR / NCLT . ( If YES , <b>enclose details</b> )			YES / NO
3.10	Whether the vendor is a potential sick company.( If YES , <b>enclose details</b> )			YES / NO
<b>Copies of annual accounts (Balance Sheet) for the last three years along with audit report are to be submitted. The above details shall be highlighted in the Balance Sheet.</b>				
<b>VENDOR'S AUTHORISED SIGNATORY</b>				



**ORGANISATIONAL INFORMATION**

**4.0 REGISTRATION PARTICULARS**

**4.1 INCOME TAX**

PERMANENT ACCOUNT NO. :  
( **ENCLOSE COPY OF CERTIFICATE** )

**4.2 CENTRAL SALES TAX**

REGISTRATION NUMBER :  
( **ENCLOSE COPY OF CERTIFICATE** )

**4.3 STATE SALES TAX**

REGISTRATION NUMBER :  
( **ENCLOSE COPY OF CERTIFICATE** )

**4.4 EXCISE DUTY**

REGISTRATION NUMBER :  
( **ENCLOSE COPY OF CERTIFICATE** )

**4.5 SERVICE TAX**

REGISTRATION NUMBER  
( **ENCLOSE COPY OF CERTIFICATE** )

**4.6 EXCISE CONTROL CODE NUMBER:**

( **ENCLOSE COPY OF CERTIFICATE** )

**4.7 NATIONAL SMALL SCALE**

INDUSTRIES REGISTRATION NO. :  
VALIDITY UPTO:  
( **ENCLOSE COPY OF CERTIFICATE** )

**4.8 SMALL SCALE INDUSTRIES**

REGISTRATION NO. :  
VALIDITY UPTO:  
( **ENCLOSE COPY OF CERTIFICATE** )

**4.9 ANCILLIARY STATUS RECOGNISED BY:**

**VENDOR'S AUTHORISED SIGNATORY**



**ORGANISATIONAL INFORMATION**

**5.0 TOTAL ORAGANIZATION STRENGTHS**

(ATTACH ORGANIZATION CHART)

DOCTORATE      POST-GRADUATE      GRADUATE      DIPLOMA      OTHER

ADMN, MARKETING  
& COMMERCIAL :

PROJECT MANAGER :

PROJECT-LEAD  
TECHNICAL :

DESIGNERS/  
DEVELOPERS :

TESTING & QUALITY :

PROGRAMMERS :

DATABASE :

PDM/ PLM :

MULTIMEDIA :

OTHERS :

TOTAL :

5.1 DOES THE COMPANY UNTERTAKE DEVEOPMENT/ SERVICES DIRECTLY (YES/NO) :

5.2 IF NO, FURNISH NAME, ADDRESS :  
OF AUTHORISED PARTNERS/ DEVELOPERS  
WHOSE COMMITMENTS WILL BE  
HONOURED BY THE VENDOR.

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<b>ORGANISATIONAL INFORMATION</b>					
<b>6.0 <u>HARDWARE / SOFTWARE RESOURCE DETAILS</u></b> (ATTACH DOCUMENTARY PROOF)					
<b>S. No.</b>	<b>RESOURCE</b>	<b>SPECIFICATIONS</b>	<b>NO.</b>	<b>Under AMC (Yes/No)</b>	<b>Remarks</b>
6.1	SOFTWARE USER LICENSES				
6.2	SOFTWARE DEVELOPMENT LICENSES				
6.3	DATABASE LICENSES				
6.4	PDM/ PLM LICENSES				
6.5	HARDWARE (MAKE, MODEL, OS, RAM, HDD)				
6.6	TEST SOFTWARE LICENSES				
6.7	ANY OTHER				
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**ORGANISATIONAL INFORMATION**

**7.0 OTHER PARTICULARS :**

7.1 IF THE COMPANY IS ALREADY IN BUSINESS WITH  
ANY OF BHEL UNITS, GIVE :

7.1.1 BHEL UNIT'S NAME :

7.1.2 VENDOR REGN. CODE NO. :

7.1.3 ITEMS FOR WHICH REGISTERED & THEIR SPECIFICATION

7.2 IS THE COMPANY ISO 9001/2-2000 APPROVED? : YES / NO  
(**ENCLOSE CERTIFICATE**) :

7.3 IS THE COMPANY CMM CERTIFIED (SPECIFY LEVEL)? : YES / NO  
(**ENCLOSE CERTIFICATE**) :

7.4 TECHNICAL COLLABORATOR :  
(FOREIGN OR INDIGENOUS)  
(**ENCLOSE DOCUMENTARY EVIDENCE**)

7.5 NAME & ADDRESS OF OEM/ PRINCIPALS:

7.6 NAME & ADDRESS OF CONCERN(S)  
HAVING SUBSTANTIAL INTEREST IN :  
(NAME OF THE OTHER COMPANY, COMMON  
DIRECTOR, PARTNER, OWNER ETC.)

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**ORGANISATIONAL INFORMATION**

7.7 DIRECTORS / PARTNERS, IF RELATED TO ANY  
BHEL EMPLOYEE.

NAME :  
STAFF NO. :  
DESIGNATION :  
DEPARTMENT :  
RELATIONSHIP :

7.8 IF ANY EX-BHEL PERSONNEL IS EMPLOYED BY THE  
COMPANY, MENTION HIS / HER DETAILS OF LAST POSTING.

NAME :  
STAFF NO. :  
DESIGNATION :  
DEPARTMENT :  
DATE OF LEAVING SERVICE :

7.9 COMPANY'S WEEKLY HOLIDAYS :

WORKS OFFICE

7.10 EXPERIENCE LIST :

(ATTACH LIST OF PRESENT CUSTOMERS WITH NAME & ADDRESS FOR OFFERED /  
SIMILAR TYPE OF PROJECTS FOR WHICH EOI HAS BEEN SHOWN AND  
WITH WHOM YOU HAVE CONTINUOUS BUSINESS SINCE LAST THREE YEARS)

7.11 PROJECT LIST:

(ATTACH LIST OF PROJECTS (INCLUDING THEIR RESPECTIVE VALUES) COMPLETED/  
ONGOING IN LAST 3 YEARS IN THE SIMILAR DOMAIN)

**8.0 I /WE GIVE THE UNDERTAKING THAT BHEL DRAWINGS &  
SPECIFICATIONS SHALL NOT BE USED IN ANY WAY  
DETRIMENTAL TO THE INTEREST OF BHEL AND / OR FOR  
SUPPLY OF ANY MATERIAL, PRODUCT OR SERVICES DIRECTLY  
OR INDIRECTLY TO ANY OTHER PARTY.**

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**PART-B**

**QUALITY SYSTEM**

<b>I. PROCESS CONTROL</b>		
<b>S. No.</b>	<b>PROCESS/ SYSTEM/ ACTIVITY</b>	<b>YES/NO</b>
1.	WORK INSTRUCTIONS ARE DOCUMENTED, UPDATED & FOLLOWED	
2.	PROCEDURE FOR QUALIFICATION/CERTIFICATION, IF APPLICABLE, AND REVALIDATION OF QUALIFICATION/CERTIFICATION OF MANPOWER EXIST SUCH AS: <div style="text-align: center; margin-top: 10px;">A) DESIGNERS/ DEVELOPERS B) PROGRAMMERS C) TEST ENGINEERS</div>	
3.	PREVENTIVE MAINTENANCE ACTIVITIES ARE PERFORMED ON CRITICAL HARDWARE/ SOFTWARE/APPLICATIONS & RECORDS KEPT	
4.	AVAILABILITY OF STATE OF THE ART HARDWARE/ SOFTWARE AT WORKPLACE	
5.	VERSION CONTROL OF THE APPLICATION & ITS MODULES	
<b>II. CONTROL OF NON-CONFORMANCE</b>		
1.	RECORD OF BUGS/ REWORK/ RECTIFICATION IS KEPT	
2.	SYSTEM OF REVIEW & ANALYSIS OF REPEATED FAILURES AND THEIR PREVENTION IN FUTURE	
<b>III. CONFORMANCE OF SAFETY/ SECURITY REQUIREMENTS</b>		
1.	FULL/ INCREMENTAL/ DIFFERENTIAL BACKUP TAKEN FOR DATA SAFETY	
2.	ANTIVIRUS SOFTWARE INSTALLED ON ALL SYSTEMS WITH LATEST DEFINITION FILES (SPECIFY ANTIVIRUS SOFTWARE WITH VERSION)	
3.	ACCESS CONTROL SYSTEM FOR AUTHORISED ACCESS OF DATA	
<b>IV. CUSTOMER VENDOR COMMUNICATION</b>		
1.	TENDER DOCUMENTS ARE REVIEWED WITH REFERENCE TO CUSTOMER REQUIREMENT BOTH TECHNICALLY & FROM DELIVERY POINT OF VIEW. IN CASE OF DEVIATION, IN TECHNICAL SPECIFICATIONS AND DELIVERY CONDITIONS, THE DEVIATIONS ARE CLEARLY SPELT OUT IN OFFER	
2.	SYSTEM OF SUBMISSION OF DOCUMENTS LIKE: <div style="text-align: center; margin-top: 10px;">A) INVOICE B) PACKING LIST C) TEST CERTIFICATE D) INSPECTION DATA</div>	
3.	SYSTEM OF CREATING SOFTWARE REQUIREMENT SPECIFICATION, TECHNICAL REQUIREMENT SPECIFICATION, ACCPETANCE TEST PLAN ETC.	
4.	ORAGANIZATION OF AFTER SALES SERVICE AND RESPONSE TIME FOR ATTENDING COMPLAINTS	
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**PART-C – ENGINEERING TECHNICAL COMPETENCE**

S. No.	COMPETENCE-I	YES/NO		
1.	VENDOR UNDERSTANDS THE ENGINEERING DOCUMENTS LIKE 2D DRAWINGS, BOM, SPECIFICATIONS, ESTIMATION ETC.			
2.	VENDOR UNDERSTANDS THE ENGINEERING DESIGN PRACTICES			
3.	VENDOR HAS PROCESS CAPABILITY TO UNDERSTAND ENGINEERING PROCESS FLOW (CHART ATTACHED)			
4.	VENDOR HAS EXPERIENCED MANPOWER TO CARRY OUT THE INTEGRATION OF DIFFERENT SYSTEMS THAT TYPICALLY EXIST IN ENGINEERING			
S. No.	COMPETENCE-II	SOFTWARE BEING USED	NO. OF EXPERTS	S/W USAGE EXPERIENCE IN YEARS
5.	3D SOLID MODELING			
6.	RULE BASED DESIGN & PROGRAMMING CAPABILITY FOR 3D MODELING, 2D DRAWING GENERATION, BOM GENERATION, ENGG. REPORTS ETC.			
7.	CAPABILITY TO DEVELOP INTERFACE WITH SOFTWARE APPLICATIONS (GRAPHICAL USER INTERFACE, LEGACY SOFTWARE/PROGRAMS ETC.)			
8.	PROJECT MANAGEMENT			
9.	PRODUCT DATA MANAGEMENT CUSTOMIZATION AND IMPLEMENTATION			
10.	2D/3D FINITE ELEMENT MODELING, SIMULATION AND ANALYSIS (LINEAR, NON-LINEAR ETC.)			
11.	DATABASE CONNECTIVITY / ADMINISTRATION			
12.	OPEN API TOOLS – (VB, C++, JAVA, J2EE ETC.)			
13.	COMPUTER AIDED MANUFACTURING			
14.	ERP (SAP) INTEGRATION			
<b>VENDOR'S AUTHORISED SIGNATORY</b>				

This is to certify that information provided above and attached documents are true and correct.

DATE  
PLACE

(SIGNATURE AND SEAL OF VENDOR )



## **ENGINEERING PROCESS FLOW**

